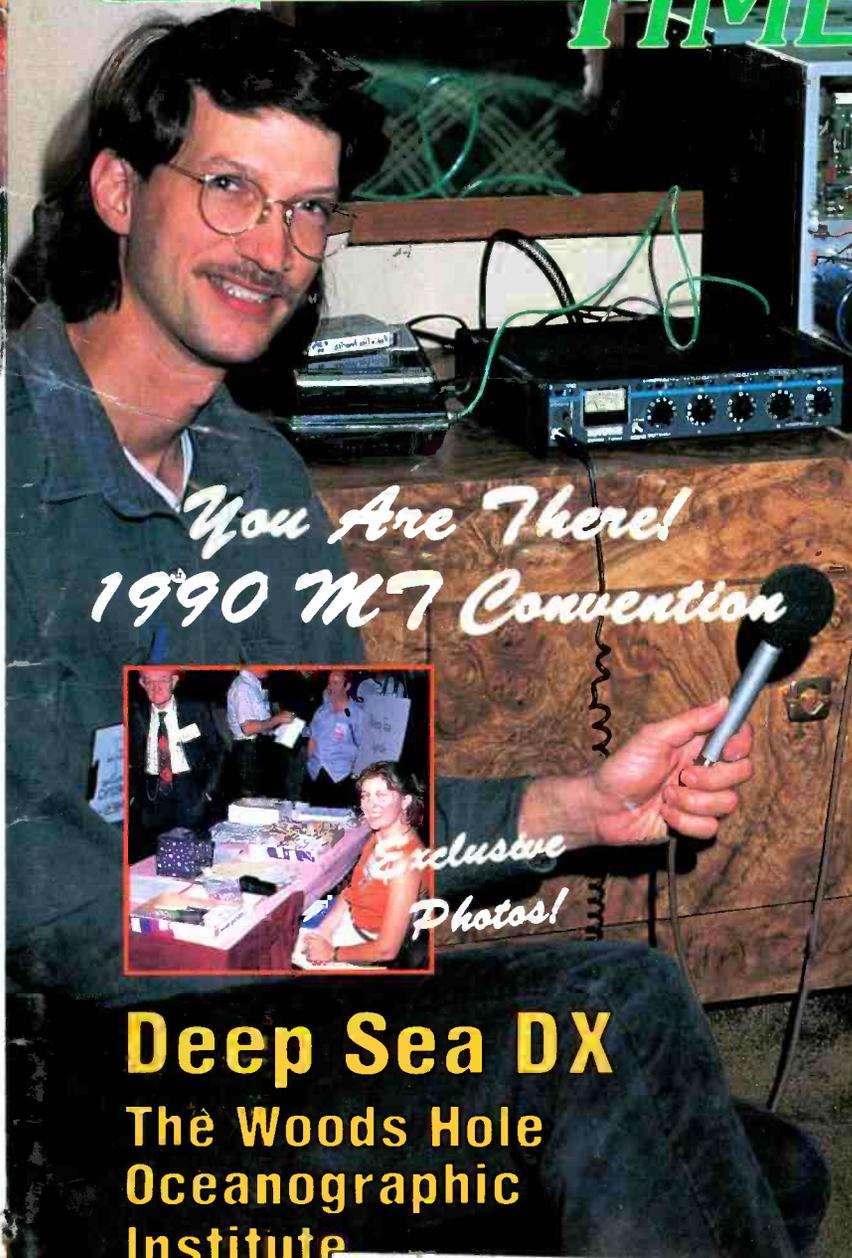


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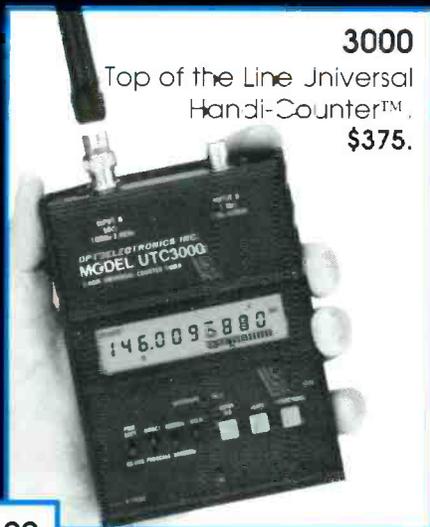


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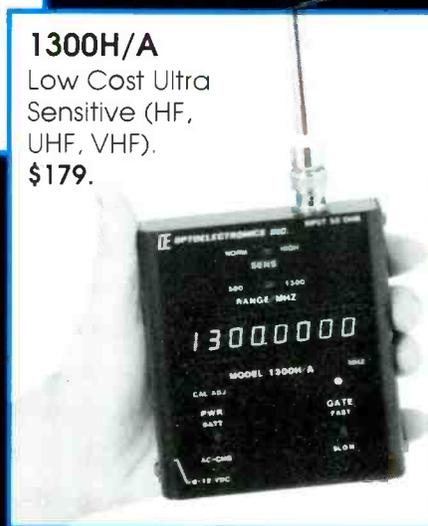
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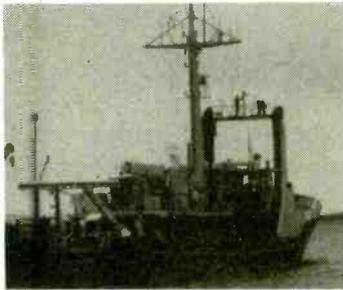
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MONITORING TIMES

Tuning in to Woods Hole by Everett Slosman

6



Nestled in Vineyard Sound on Cape Cod is a world-renowned research organization -- the Woods Hole Oceanographic Institute -- whose activities range from underwater exploration of historic shipwrecks like the *Bismarck* and *Titanic* to maritime research and scientific expeditions. Tuning in to private station KXC-713 communications with the Institute's several research ships on expedition can be fascinating -- and educational.

The Terrible Twenty by Charles Sorrell

10

Sure, there are many, many stations which will always be impossible to DX in North America. Our Terrible Twenty, however, are picked from those stations for which there is just a shadow of a chance of reception. Don't forget these long shots as you twirl around the dial; one night the propagation might be ju-u-ust right for that once-in-a-lifetime DX!



Playing the Name Game by Don Moore

14

Do the Latin American stations all sound alike to you? How will you ever be able to sort them out so you can count a station as a positive catch?

If identifying these Spanish-speaking stations has discouraged you from listening, Don Moore's article will give you some guidelines to follow to help pick out the station ID from the background chatter. Even commercials and local news can be clues in the Name Game.

Hunting Quayle on AF2 by Sue Kennedy

18

A close-up look at Air Force 2 was Sue's assignment. As she requested her press pass as a writer for *Monitoring Times* the Vice President's secretary said, "You know you can't bring any scanning radios with you, don't you?" This was only a minor setback for our resourceful reporter who listened in to Secret Service and Air Force 2 frequencies anyway. Can you guess how?



COVER: Karl Zuk and Alan Weiner set up the transmitter for convention station 530 kHz; Inset: Guests got their first welcome by MT staff at the registration desk. Photos by Harry Baughn.

Pictures at a (Successful) Convention!

21



The *MT* convention was an overwhelming success. We can't begin to share with you the excitement of putting faces and personalities to the names and voices we've encountered over the years, of sitting in a room full of people who share the same enthusiasm for radio monitoring. But, well, we do happen to have a few pictures ...

And more ...

We'd like to welcome Rob Gerardi to the *MT* staff as a regular contributor to the Ham column. Well-known and respected by those in the ham community who monitor rare amateur DX transmissions, Rob's work has appeared in *CIDX Messenger* for many years.

Glenn Hauser reports on the serendipitous reception of a special just-for-the-Convention broadcast from Radio Saint Helena (p.24). As promised, Larry Van Horn comes through with an in-depth look at the worldwide Israeli Mossad operation (Israel's CIA--p. 28). Bob Kay answers the most commonly-asked questions about scanning on page 32.

If you'd like to monitor CW and RTTY only occasionally, check out the review of the affordable Microdec decoder on page 39. Also included in *MT* this month is a review of the Realistic DX-370 (or Philips/Magnavox AE 3805, or Sangean ATS 800 -- page 88), and a side-by-side comparison of the AOR AR3000 vs. the ICOM R7000 (page 90).

Got the bug to build during the winter months? How about an indoor antenna for shortwave listening (page 92) or a groundplane to take you from mediumwave through UHF (page 96)? And while you're building, don't forget Safety First, says Uncle Skip (page 40).

Listening targets this month might include the Naval Air Station in Dallas, Texas (page 42), or maritime frequencies in the Mediterranean Sea (page 44), or special interest ham nets (page 46). That should keep you busy 'til next month brings another bonanza of features, reviews, projects, and tips.

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STAFF

Publisher

Bob Grove, WA4PYQ

Managing Editor

Larry Miller

Associate Editor

Rachel Baughn

Subscriber Services

Beverly Berrong

Typist

Elsa Kerschner

Advertising

Beth Leinbach

Dealerships

Judy Grove

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Program Manager	Kannon Shanmugam
Program Monitors	John Carson Jim Frimmel
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Exp Workshop	Rich Arland, K7YHA
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Utility World	Larry Van Horn, N5FPW
Below 500 kHz	Joe Woodlock
American Bandscan	Karl Zuk

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LETTERS



Everyone at *Monitoring Times* had worked very hard on the convention. Still, it was our first attempt at such an event. Would we succeed?

By midday Friday, the answer was clear. Not only was the convention a success -- if the comments of the attendees are any indication, we succeeded beyond our wildest dreams!

Hundreds of people -- some from as far away as Singapore, Australia and England -- and dozens of exhibitors -- ranging from Radio Shack to Radio Canada International, to name but two -- converged on Knoxville for three days of radio fun.

It was great. But don't take our word for it. Check out the photos on pages 21 through 23. Or ask someone who was there. But for goodness sake, don't miss out on next year's *Monitoring Times* convention. More information will be forthcoming soon!

Thanks to everyone who helped to make the convention such a great time. See you in 11 months!

Wayne Heinen of the Colorado CPC Machine writes in with a special two-day DX challenge for *Monitoring Times* readers. As an arm of the National Radio Club, Wayne, together with Jeff Tynan, gets in touch with various radio stations around the country and arranges for them to go on the air with test broadcasts.

What makes these broadcasts special is not only the sometimes distinctive programming but often the hours of operation. For example, a station normally restricted to daytime broadcasting might go on the air at midnight, using test tones interspersed with station IDs.

As you might imagine, such distinctive programming -- not to mention the fact that the station otherwise might have absolutely no opportunity to be heard at night -- helps to cut through the static and make these some real DX gems. In addition, those stations that agree to conduct special DX tests also agree to issue QSLs or

confirmations to those who are able to log them.

Here, courtesy of Wayne, the Colorado CPC Machine and The National Radio Club (P.O. Box 116, Poquonock, Connecticut 06065) are some DX tests scheduled for November. Give 'em a try. This can be real fun!

11 November: 1380-WSYB in Rutland, Vermont, will conduct a special DX test from 5:30 am to 6:00 am EST. This test will consist of music interspersed with voice and Morse code identifications. Reception reports go to Mr. Tom Elmore at P.O. Box 249, Rutland, VT 05701.

12 November: 1600-WARU in Peru, Indiana, will be on the air from 2:00 am to 2:30 am. It should be easy to pick out because Chief Engineer James L. Swearingen will be playing march music along with voice and Morse code stations IDs. Reception reports on this test go to Mr. Swearingen at P.O. Box A, Peru, IN 46970.

12 November: 1600-KRXY in Denver, Colorado, will go off the air from 2:00 am until 2:30 am but then will come on the air with its 5,000 watt non-directional signal, broadcasting both Morse code and voice IDs from 2:30 to 3:00 am EST. Your reception report for KRXY goes to Chief Engineer Girard M. Westerberg, 7075 W. Hampden Ave., Denver, CO 80227.

Ladies and gentlemen, fire up those radios! Many thanks to Wayne for setting these up.

Nigel Reid of London writes to *Monitoring Times* with an interesting proposal. Says Nigel, "One of the spin-offs of the outbreak of democracy in Eastern Europe is the freedom of DXers there to pursue their hobby free of government repression.

"One group of dedicated Bulgarians are trying to form a DX club and I am trying to assist them.

"Their main problem is a lack of hard currency and I have suggested to them that they might obtain some by the sale of Russian language reception report forms and recordings of local radio stations.

"I am meeting one of the Bulgarians in London this month and I should be most grateful if any *MT* readers interested

[Please turn to page 100]

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Goodbye AM, Goodbye FM

Today's radios -- and the thousands of stations across the country that broadcast to them -- could soon become as outdated as 45 rpm records because of advancing technology.

The emerging technology, called digital audio broadcasting, is capable of providing high quality sound that is vastly superior to standard radio broadcasts. If it delivers as promised, DAB could provide virtually flawless reception, even underground in tunnels, provide huge savings in transmitter siting and electricity costs, and allow for more stations on a new frequency band. Needless to say, the owners of some 10,000 radio stations across the United States -- many already hard-pressed -- are feeling threatened, and rightly so.

Some industry officials, notably the National Association of Broadcasters' David Hicks, predicts that DAB is only "a minimum [of] five years away." Even so, once it is introduced, as Hicks believes is now inevitable, the superior quality of DAB could quickly conquer a new generation of radio listeners.

VOA Takes Heat in Gulf

Syndicated columnist William Safire has implicated the Voice of America in the Persian Gulf crisis, saying that an official with the State Department routinely "killed" one story and ordered other officials to

apologize for editorials on the station.

According to Safire, Assistant Secretary of State John Kelly "killed" a July 25 broadcast [on the VOA] that would have warned Iraq that "the U.S. remains strongly committed to supporting the individual and collective self-defense of its friends in the Persian Gulf."

Later, continues Safire, Kelly instructed the U.S. ambassador to Iraq "to apologize for a strong Voice of America editorial on human rights."

VOA to Rebroadcast Radio Vilnius (USSR)?

According to a report on the station, the U.S. government operated international shortwave service "is willing to assist Radio Vilnius in its effort to find a source of transmission outside of the Soviet Union."

No further details were given but could this mean that you'll soon be able to hear the Lithuanian National



ARMED FORCES RADIO AND TELEVISION SERVICE
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AFRTS Sun Valley, CA, site, courtesy Richard Lane

Since AFRTS shortwave service was discontinued, the President's pep speech was not heard by servicemen in the Middle East.

Anthem over the Voice of America? The Soviet Union has "turned down the volume" on Radio Vilnius in recent months by dropping or cutting back the power of its in-Soviet relay transmitters, making it difficult, if not impossible, to hear in many parts of the world.

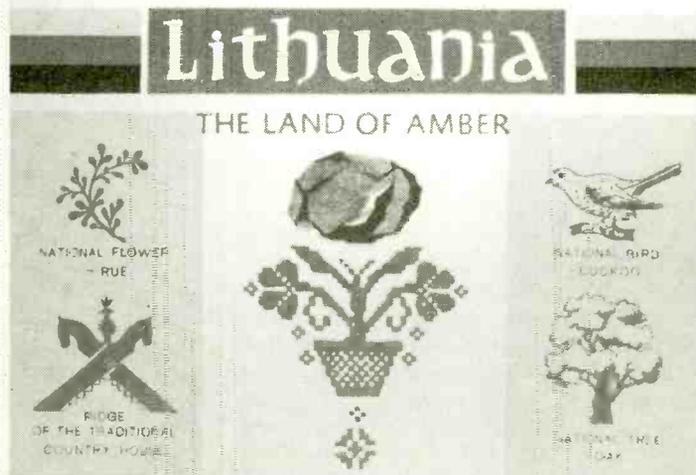
We Hear You (Now)

A few months ago, President George Bush gave a radio pep talk to U.S. Forces stations in the Persian Gulf over Armed Forces Radio and Television (AFRTS). Unfortunately, because AFRTS was removed from



VOA, Woofferton, England, courtesy Ray Labrie

Ticklish diplomacy: What is proper protocol for the VOA in crises such as the Middle East and Lithuania?



the shortwave bands several years ago and because there were no medium-wave transmitters in the area, the very people to whom the address was directed were unable to hear it. Instead, the speech was disseminated by way of printed flyers.

Now comes word that AFRTS will begin reaching members of Operation Desert Shield via six small transmitters that have now been placed in Saudi territory. The transmitters will receive programming transmitted via satellite from Los Angeles and rebroadcast it with a range of 20 miles. The army declined to provide the frequencies of the transmitters.

Meanwhile, the American radio industry has launched a campaign to buy some 25,000 radios and batteries to be sent into the region.



It's For You (At 35,000 feet)

Airline passengers will soon be able to make telephone calls while flying anywhere in the world. GTE Airfone, an Oak Brook, Illinois, cellular phone service and Communications Satellite Corp. (COMSAT) of Washington, D.C., said they have signed an agreement to operate the phone service starting in mid 1991.

Under the agreement, GTE Airfone, a subsidiary of GTE, will use COMSAT's satellite and earth-station network to expand their currently existing in-flight airplane phone service.

Unless someone else beats them to it, this will be the first time that the service will be available globally.

Ducking for the President

Secret Service agents and local authorities fire fake rounds from automatic weapons and fill the night air with the sound of explosions when they practice for a presidential crisis in Kennebunkport, Maine. And the neighbors are angry about it.

"We don't know if they're shooting live rounds or not," says one frazzled neighbor.

The Secret Service says that it merely sets up the drills so agents and their local counterparts can practice for unexpected calamities during visits to Walker's Point by President Bush.

"They scare the daylights out of us," says the neighbor. "I'm sorry, but I've had it with the Secret Service."

Monitoring for Quakes

A number of radio monitors claim that they can predict earthquakes by listening to the radio. According to reports, radio stations "drift" off frequency in the days or hours preceding a quake.

Another man who predicts quakes (and who allegedly predicted the San Francisco quake earlier this year), has said that we should be ready for another, this time in Arkansas on the 3rd of December. If you find your favorite stations "drifting" off frequency on the 2nd, let us know! Stay by your radios!

Credits: ABC-TV, Associated Press, United Press International via Dave Alpert, New York, New York; *The Boston Herald*; Tom Gavaras, Minnetonka, Minnesota; Ted Maddalena, East Boston, Massachusetts; Jeff Multer, Charlotte, North Carolina; Mike Westdal, Sacramento, California; Mark Widerstrom, Houston, Texas; Karl Zuk.

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From recovering sunken ships to exploring the mysteries of the deep; these are some of the adventures to be had

Tuning in to Woods Hole

Story and photos
by **Everett Slosman**

The marine bands produce a variety of catches; high-seas rescues, ships' chatter, ice patrols, mariners' warnings, navigation data, and other public and private transmissions. DXing the marine bands can be both fun and educational.

Take the "O" transmissions; the ocean research vessels and associated shore stations operating from exotic locations and offering something for everyone.

In 1986, for example, "O" listeners heard from-the-site reports coming from Dr. Robert D. Ballard's *RMS Titanic* expedition long before it became a staple on the evening news. They used voice, CW, RTTY and fax to report their progress.

More recently, listeners followed a crew from Woods Hole Oceanographic Institution (WHOI) as they pinpointed the watery grave of the *Bismarck*, the World War II German battleship. On this and other expeditions, German listeners account for a majority of the reports sent to Woods Hole, says Steve Page, a Senior Electronics Researcher and the person responsible for verifying them.

Oceanography is more than hunting for sunken vessels and Woods Hole Oceanographic Institution is more than a private, nonprofit research organization. It is a way of

life for the eight hundred full-time staff members who work year-round with more than one hundred graduate students on a variety of projects.

Thirty years before NASA put men in space, argonauts like Lucius Beebe were making underwater descents in primitive bathyscaphes to explore the often hostile ocean. These dives attracted many bright students to the marine sciences and once the Self-Contained Underwater Breathing Apparatus (SCUBA) became a reality, it opened up the underwater worlds.

Marine institutes are now part of many top universities, but for several reasons, the unpretentious village of Woods Hole on Cape Cod, Massachusetts, became a worldwide center for study. Today, ships from WHOI, Marine Biological Laboratory, Northeast Fisheries Center, U.S. Geological Survey and Sea Education Association all homeport here.

Cape Cod juts into the Atlantic Ocean giving the state its distinctive hook-shaped eastern shoreline. The Pilgrims landed on the cape before moving on to Plymouth. Marconi built his first trans-Atlantic station here and early vintage radio-equipped planes flew sub-hunter patrols from primitive airstrips during the early days of World War II.

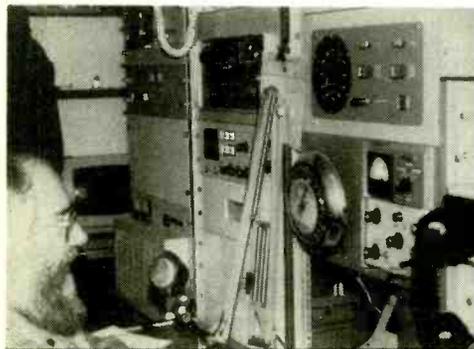
Woods Hole, itself, nestles snugly on Vineyard Sound in the southwestern portion of the cape. For three centuries, its semi-isolated population consisted of farmers, fishermen and a few wealthy "summer people."

Then, the politicians in Boston discovered the area's rustic charm, built summer homes and paved the road that connected Woods Hole with Falmouth. The area's isolation vanished in a cloud of automobile exhaust.

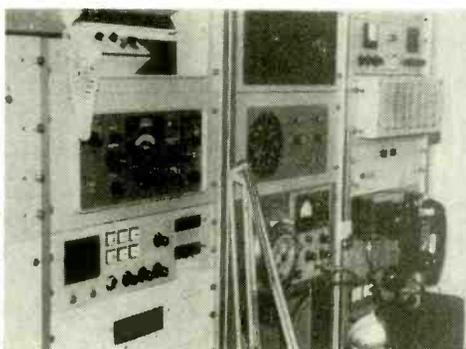
Geographic attributes, such as a sheltered harbor and rapid access to the ocean, made the village an ideal location for siting ocean research operations.

So, a stereotypical 300 year old village evolved into a seaborne university complex where PhDs are as common as eelgrass and graduate students stevedore cargo and supplies on board the vessels as part of their course work.

The ferries bound for Martha's Vineyard and the Outer Islands leave on fixed schedules. Weekend skippers close-haul their tiny craft under a drawbridge on their way to lunch at the famous "Black Duck," while occasionally, a Coast Guard patrol boat leaves the station and puts to sea at flank speed.



Steven Page at the control board of KXC-713, Woods Hole Oceanographic Institution's private marine station.



Main rack at KXC-713



WHOI's dockside complex. Building on left is administration; on right is marine equipment.

WHOI spreads out through the crabbed downtown area, but the main complex consists of two buildings and a quay. KXC-713, the institution's private marine radio station, is on the second floor of the dockside building. The tech shop is on the second floor of the other.

Going from one to the other is its own adventure: two sets of stairs, dodging over and around heaps of marine gear and squeezing into a room slightly less spacious than a walk-in closet. This one kilowatt setup is strictly utilitarian, not anything like Hollywood's version with racks of flashing lights, radio chatter and officers dressed in whites straining to hear fading signals.

The only maps are propagation predictions that paper the back wall and the modern broadcast equipment is panel mounted or sitting on shelves. KXC-713's only purpose in life is to maintain twice daily contact with WHOI's vessels.

Transmissions are scheduled for 0930 and 1530 local time rather than UTC.

Riding the broadcasts means listening to exotic locations where oceanographic research may be underway: Ponta Delgada, Azores; Forteleza, Brazil; Abidjan, Ivory Coast; Longyearbyen, Norway; or Izmer, Turkey, to name a few destinations explored over the years. Think about the bragging rights associated with the QSLs.

Currently WHOI's "O" ship activities are centering around the Pacific Rim. However, the public information office was unwilling to provide current or projected voyage schedules. So nailing down transmission locations remains a matter of pot luck and the willingness of the communications people to indicate it on verifications.

Page and his assistant, Aldon Cook, are impressed by the polite and courteous verification requests they receive from German DXers.

WHOI researches five "O" disciplines:



R/V Oceanus at dockside. Woods Hole harbor leading to Vineyard Sound is to the right.

biology, chemistry, geology and geophysics, physical oceanography and ocean engineering. To accomplish these missions, they operate five research vessels: the *DSV Alvin*, *R/V Atlantis II*, *R/V Oceanus*, *R/V Knorr* and *R/V Asterias*.

Occasionally, projects include vessels from other institutions and will constitute a rare catch.

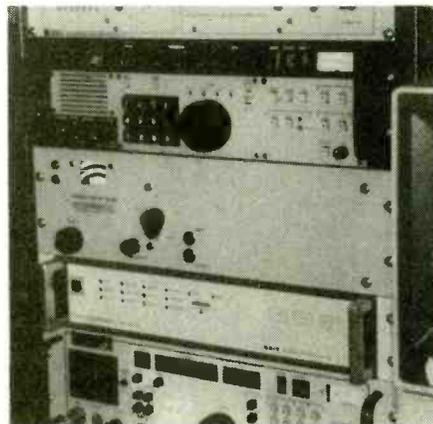
Atlantis II, *Knorr* and *Oceanus* carry similar communications gear: a SSB HF 1 kW transceiver, VHF-FM radio telephone, LF and HF CW radios, facsimile recorder, SITOR and INMARSAT equipment.

The most famous ships are the 7.6 meter deep submergence vehicle *Alvin* and its mother ship, the 64 meter *Atlantis II*. *Alvin's* 26 year career includes more than 2100 dives at depths up to 4000 meters (13,124 feet). The vehicle has been used for chores ranging from recovering an H-bomb accidentally lost off the coast of Spain, exploring black smoker hydrothermal vents off the Oregon coastline and starring in "Grey Lady Down," a techno-thriller movie from the mid-70s.

Battery powered *Alvin* operates with a crew of three maintaining underwater speeds of one knot for eight hours. Robotic arms perform finite movements. Other high-tech goodies include a 35mm stereo camera, "slurp gun" that vacuums up fragile marine animals, and respirometer which measures oxygen usage by shellfish like mussels and clams.

Alvin communicates with *Atlantis II* via an underwater acoustic telephone. Then, the scientific information is radioed back to Woods Hole. Other communications items include a closed circuit TV system and a VHF marine radio telephone.

The Navy holds title to *Alvin* because the submersible was built with Navy dollars.



Radio room rack aboard *R/V Oceanus* located to the rear of the bridge.

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4143.6
6218.6
6221.6
8291.1
8294.2
12429.2
12432.3
16587.1
16590.2
21127.1
22124.0

All frequencies valid until 0001 UTC, July 1, 1991.

However, as a practical matter, *Alvin* has made only 26 dives for the Navy.

The *Atlantis II* which replaced the *R/V Lulu* as mother ship was built by the Maryland Shipbuilding and Drydock Company and carries a crew of 28 with a similar number of scientists. A twin screw diesel and thruster bow design gives the ship a 9,000 mile, 12 knots range. She uses KADC as her call sign.

Atlantis II is not required to carry a CW-trained radio officer because of her small size. Cook points out CW is a costly medium. "It's 50 cents a word while SITOR is around \$2.40 a minute."

On-board technicians, who routinely service the expedition's electronics gear also maintain and operate the ship's radio equipment.

Actually, *Knorr* is the only ship in WHOI's "little navy" large enough to maintain a radio watch while at sea. Currently, the ship is finishing a refit at the McDermott Shipyard, Amelia, Louisiana, and is expected to return, first to WHOI, then go back out to sea. Keep

tuned for transmissions from KCEJ.

Knorr has been lengthened to 85 meters and given a new power plant consisting of two 1500 hp Schottel Z-drives at the stern and a 900 hp retractable Z-drive bow-thruster. This configuration makes it respond like an oversize bass boat. Range will be 16,000 miles at top speed and the ship will carry 34 scientists.

This ship also belongs to the Navy and still maintains its official hull number, AGOR-15. WHOI leases it under contract with the Office of Naval Research and supplies a civilian crew.

The *Oceanus* is the smallest ocean-goer, a mere 54 meters. She carries 24 people including a scientific party of 12. A single screw diesel makes 12.5 knots and ranges up to 7,000 miles. *Oceanus* is also the newest in the fleet.

Oceanus's radio room contains racks, a desk and some shelf space. The captain and mates handle transmitting and receiving chores, so placing the radio room along the back wall of the bridge makes sense. However, the area is cramped.

Oceanus uses WXAQ.

WHOI owns another ship, the 14 meter *R/V Asterias* which looks more like a fancy lobster boat than a research ship as it prowls the coastal waters. This boat handles, primarily, small off-shore projects, carries a party of ten on daytrips, three on overnighters, and can cover 600 miles at 12 knots.

Asterias' radio gear consists of a Stephens "SEA 209" SSB, ICOM M80 VHF on the flying bridge, and a similar unit in the wheelhouse. Listen for chance transmissions on the coastal bands, since she keeps no regular schedules.

As a rule, KXC-713's regular transmissions begin in the 12 and 16 kHz bands. Final

frequencies depend on propagation conditions and tropical reception problems. Protocols follow a regular pattern. Once the frequencies are agreed upon, voice traffic, position reports and phone patches follow. Next comes fax, telex, data, RTTY, INMARSAT and SITOR traffic.

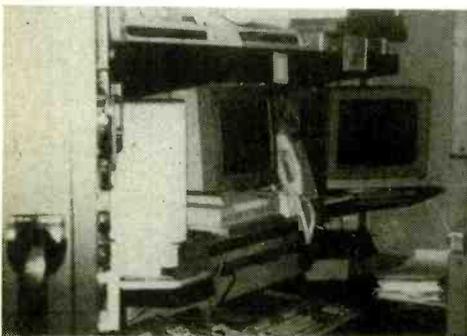
As a limited private shore station, KXC-713 can use "some frequencies up to 8 MHz for narrow band direct printing teletype," says Cook, "to reach *Atlantis* and *Oceanus* directly rather than by going through a SITOR linkup." They are planning to apply for permanent authority would give WHOI additional communications flexibility. If Page can come up with additional funds, look for experimental transmissions over the next few years.

Woods Hole broadcasts do more than reach out and touch someone. They function as teaching tools and are aimed at a broad constituency. Naturally, these efforts are separated from the communications department.

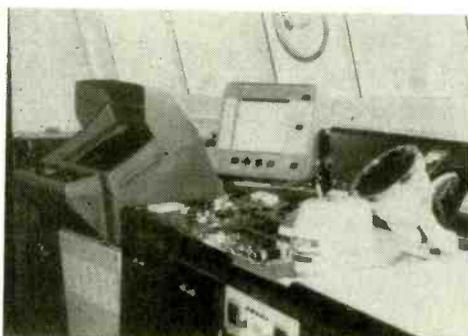
For example, satellite transmissions have become the educational core of Jason; an underwater exploration series aimed at young students. Dr. Ballard has brought more than a quarter million students under Lake Ontario via closed circuit television. Here, they witnessed the exploration of the *USS Hamilton* and *USS Scourge*; ships sunk in the War of 1812.

Transmissions from each site went by fiber optic cable to a topside barge where it was encrypted and transmitted to the SBS4 satellite. The 1990 *World Radio TV Handbook* shows SBS4 launched in 1984 with ten 43 MHz bandwidth Ku-band transponders aboard.

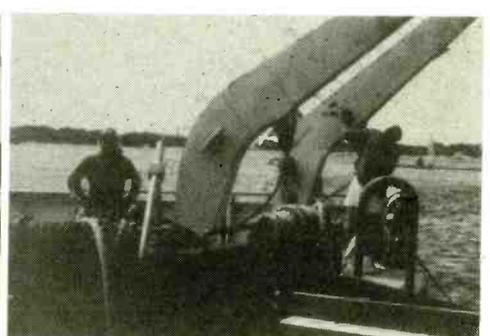
The signal was relayed to the EDS Corporation Satellite downlink, Atlanta, Georgia, and then went on to Turner Broadcasting System for final production. At this point, it was reencrypted, transmitted



Radio room as seen from the bridge



Bridge of the *R/V Oceanus* showing radar, sonar and other navigational aids.



The *Oceanus*, where two crew members are stowing gear and supplies. Two large davits launch and retrieve marine gear.

back to the satellite and finally downloaded to the Jason Museum Satellite Network. The end result was a structured lesson presented to the students.

They became part of the exploration process by actively participating in the question and answer sessions. Jason proved so successful further expeditions have been considered for the Galapagos Islands, Spain and Japan.

Most WHOI projects are not as spectacular as Jason or locating the *Titanic's* bones. They involve scientific investigations like sampling cosmogenic helium in Antarctica, riding the Gulf Stream northward over the Georges Banks or conducting tomographic experiments in Monterey Bay.

But, for those who enjoy digging out a tropic transmission during daylight hours, chasing "O" signals ranks high on the thrill list.

What's more, both Page and Cook appreciate reception reports. They each hold ham tickets and understand the romance associated with DXing, especially reports from off-propagation path locations.

They seldom receive reception reports from North America, yet we US DXers have a decided edge. One possible explanation is that listeners may have been searching the wrong frequencies. Even the usually reliable *Shortwave Directory* contains errors. So, Page provided an up-to-date frequency list for *Monitoring Times* readers.

Send reports to Steve Page, Communica-

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tions Department, Woods Hole Oceanographic Institution, Woods Hole, MA 02543; SINPO codes are fine. Describe your receiver and antenna. Think in linear meters instead of feet. One meter roughly equals 3.28 feet.

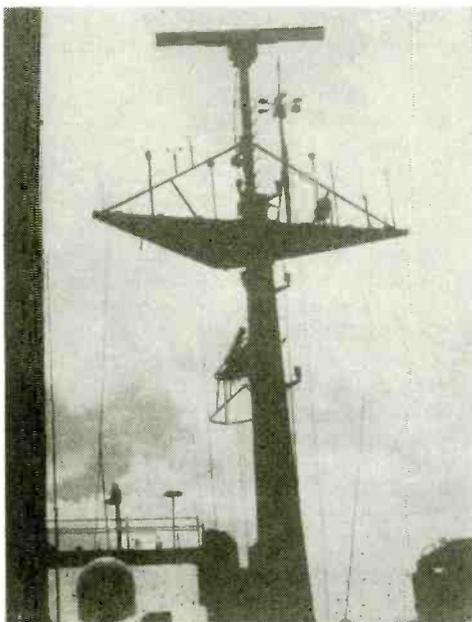
Neither is shy about technical preferences either: Cook loves the ICOM 7000 receivers which are used at WHOI while Page is hooked on Grove antennas.

They are usually found in the tech shop amid a mass of equipment, benches, shelves and tech publications. It's a low-stress, jeans and comfortable shirt environment where a pocket screwdriver and a hastily sketched

schematic seems to solve most problems.

Here, even the small talk revolves around electronics, though everyone reserves a New Englander's right to point out the shortcomings of this year's Red Sox or Celtics team. Isn't that why they fought the battle of Bunker Hill?

Improve your chances of catching a Woods Hole morning transmission. Bait your receiver with a steaming cup of coffee and a plate of New England cranberry muffins.



Ship's mast with communications and radar antennas.



Inner harbor at Woods Hole. Downtown area and WHOI's main complex in the background.

The Terrible Twenty

by Charles Sorrell

It doesn't take a neophyte shortwave listener any time at all to discover that not all shortwave stations are created with equal hearability. BRT in Belgium doesn't come pounding in like the Voice of Germany, for instance. On the other hand, Radiodiffusora in Sena Madureira, Brazil, is hardly heard with the same regularity as "Brussels Calling." Everything, as they say, is relative.

Then there are those stations that, difficulty wise, are simply in a class by themselves. We're not talking pretty tough here, or even extremely hard. These guys live in the land of the fiendishly difficult -- the closest thing there is to just plain impossible to hear. The mere thought of logging one of these stations will turn a highly experienced DXer into strawberry jelly.

We've chosen to present you with twenty such stations, just in case you have the intestinal fortitude to go after one or more of them. Certainly there are more than twenty which would fit into this near-impossible category. A browse through the Peru and

Bolivia listings would turn up half that many alone. Ditto for Indonesia. And ditto again for such categories as clandestines and European pirates. So, rather than choose from these categories, when any one of a dozen would qualify, we've chosen our terrible twenty from other areas.

Naturally, the difficulty of the stations chosen relates to North American listening locations. They may not be as hard for listeners in other areas of the world. Some, though, are mean enough to smash the patience of DXers anywhere but within 50 miles of the transmitter.

Actually, some of the stations on the list have been heard in North America. There has to be some hope, right? Others have been heard here but later changes in facilities, frequencies or scheduling have made a once difficult logging now even more so.

Here's our *Monitoring Times* Terrible Twenty.

Let's begin in Europe, with Schulungs-

sender des **Osterreichischen Bundesheeres**, otherwise known as Austrian Army Radio. Operated by the Austrian military, there are QSLs from this station in the collections of a number of North American DXers. But only because many years ago the station operated on 6255 and had a schedule that at least offered an opportunity now and then. Today, even with a much more powerful 10 kW, reception of this station is virtually impossible. It operates on 5035 from 0930-1430.

Italy's broadcasting law now allows private organizations to operate shortwave stations and several are now on the air (Adventist World Radio in Forli, the IRRS and so on). Many of these have been heard in North America, at least in the east. One which doesn't seem to have been reported is **Radio Calabria International** in Gioiosa Jonica, on the Ionian Sea in southern Italy. The station is scheduled only on an irregular basis, operating from 1200-1300 with 200 watts on 7700.

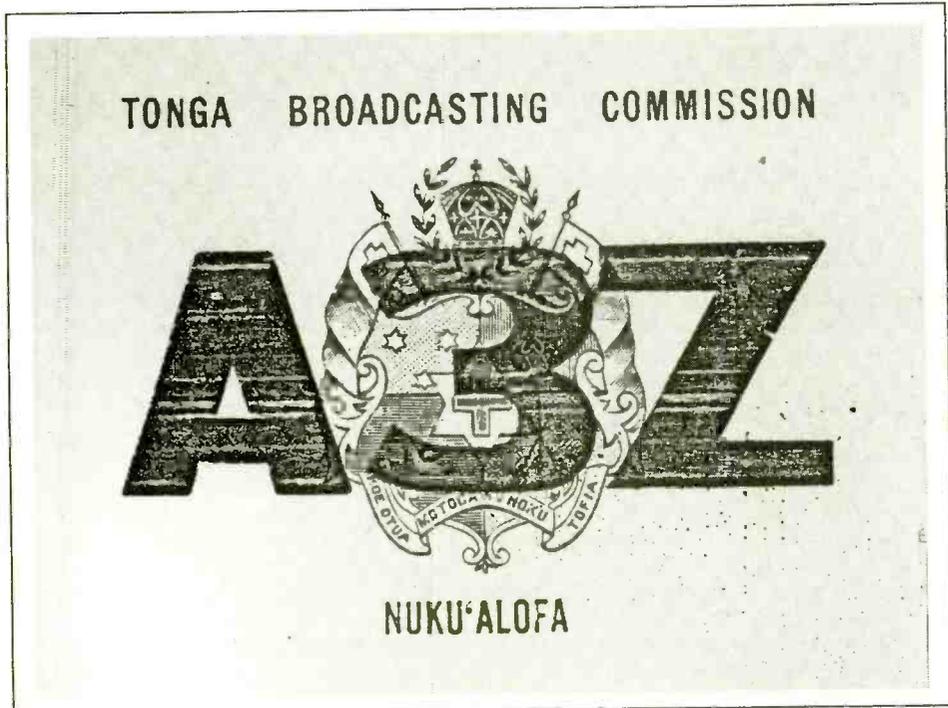
Another station which a few long-in-the-tooth DXers caught a number of years ago is **Radio Bayrak** or Bayrak Radio & TV from northern Cyprus. At one time this station was operating out of band, up on 6278 with a schedule in our evening hours. The picture today is a lot sadder. Bayrak Radio uses 6150 between 1000-2200.

The USSR's huge and complex broadcasting system uses shortwave from dozens of sites, many simply relaying various external services. The 60 meter band is home to a number of regional outlets and, given enough time, most can be heard in North America. One which is almost never logged, though, is **Palana** on the northwest coast of the Kamchatka Peninsula. It is scheduled with local programs on 4520 Saturdays from 0700-0800 and Sundays 0600-0815.

In Africa **Radio Diffusion Nationale de Burundi** has been heard and verified by any number of old timers, as well as some who haven't been at it all that long. The station would occasionally break through on its 3300 frequency from 0300 sign on. 3300 appears to have been dropped, however, and only 6140 is in use. The sign on time is still 0300 but no one is hearing it now.



This old eye-catcher of a card has been used to confirm only a very few receptions of Radio Senegal regional stations at Tambacounda and Ziguinchor.



A few North American DXers have this card from A3Z, Tonga, gracing their collections.

The main government station in Mozambique is a difficult catch but the Mozambique regional stations are far worse. Emissora Provincial de Cabo Delgado at Pembe is out of reach. The power is probably little more than one kilowatt, if that. The frequency is listed for 5004 variable but listeners closer to the scene have noted it recently on 4877. It signs on at 0400 with programs in Portuguese and native languages.

Senegal offers a pair of impossible catches, though this is another case where a few scores were made many years ago under different conditions. The regional station at Tambacounda operates with just 4 kW from 1000-1800 on 6045. The other regional, at Ziguinchor, uses 6180, also with 4 kW and also on a 1000-1800 schedule. Which is tougher? It's a flat out tie.

One cannot compile a list like this without including everybody's most wanted: ZOE -- The Tristan Broadcasting Service on the island of Tristan da Cunha. The number of DXers who have heard this -- anywhere -- can literally be counted on the fingers of one hand. Tristan Radio runs a teeny-tiny 40 watts on 3290 weekdays from 1600-1700, Mondays, Wednesdays and Fridays 1935-2200 and Sundays 1000-1200.

Like Mozambique and Senegal, some of Zaire's regionals are the stuff of tears. Most have been logged here on rare occasions over

the years. Perhaps the rarest is the station at Mbandaka, listed for an encouraging 10 kW and an 0500 sign-on. But the 5995 frequency is too busy a spot. It's even money, too, that the station isn't always active.

Like the Soviet Union, the People's Republic of China has shortwave stations in a lot of different places around the country. And, given time, the serious DXer can log most of them. The Central People's Broadcasting Station at Wengzhou, in Zhejiang Province, is an exception. This station serves mainly a local area with a transmitter operating in the curious world of 120 meters on 2415. It's on the air from 0805-1230 daily so there is a chance of hearing this, however slight.

All of the Vietnamese regional stations are difficult and all present the same set of problems: irregular operations, low power and frequencies which float all over the place. Perhaps the toughest is Tainguyen which, when active, uses variable 6689 between 1200-1400, more or less.

The same things that plague the Vietnamese regionals also bedevil the Laotians. Several regionals have been heard over the years but the most elusive is Pakse on variable 6604, in Laotian and local languages between 1000-1415. It is probably off the air as much as it is on.

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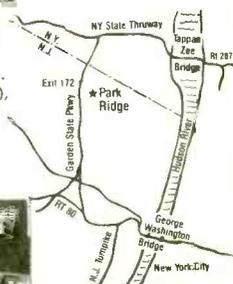


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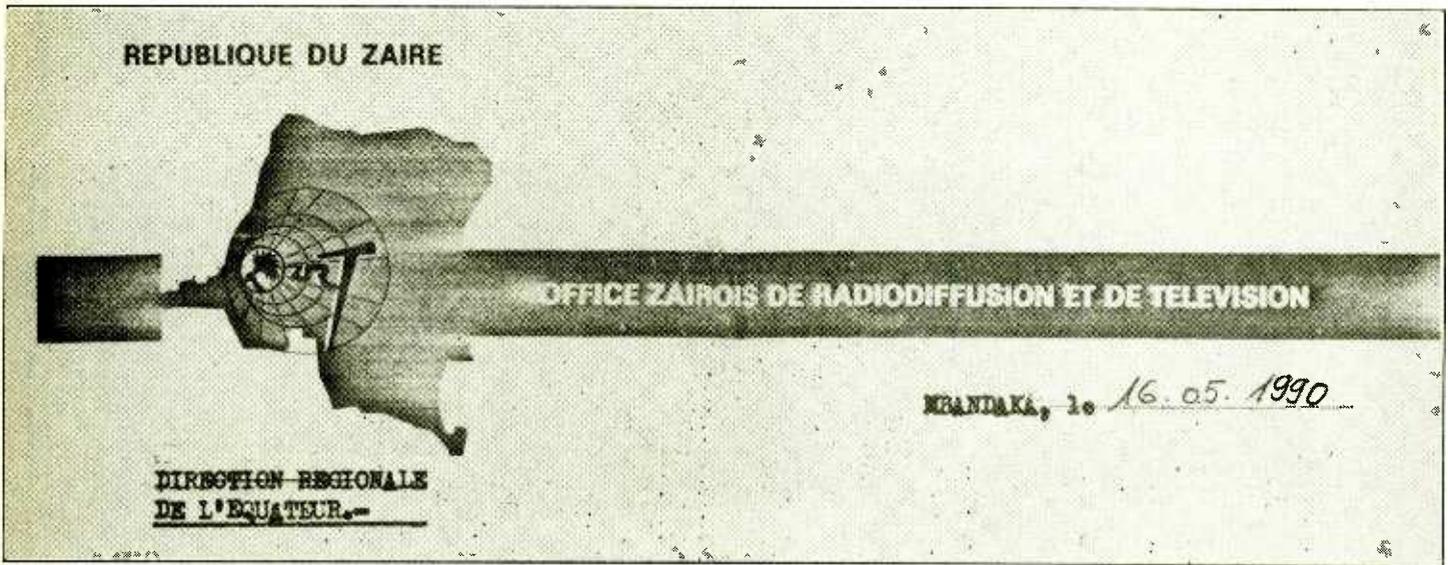
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The Zaire regional station at Mbandaka on 5995 may never have been heard in North America.

In North Korea the Korean Central Broadcasting Station operates half a dozen local stations on shortwave. Here again, you can just toss a coin to decide which is the most difficult. We'll go with the one using the lowest frequency -- Sariwon on 2350. It carries its own and Pyongyang's programs at various hours during its 22 hour per day schedule (except 1800-2000).

Once upon a time there were a handful of really neat Thai stations on the air, but for many years now it's been only Radio Thailand, which is a tough nut in itself. A couple of years ago one of the old ones returned: Or Sor, the station of the Thai Royal Palace. It's been logged by one or two Australian DXers but no one in North

America. The only possible time window for us is 0900-1200. The frequency is 6149.

The most commonly heard station on the list, as far as North America goes, is A3Z -- the Tonga Broadcasting Commission, on 5030 from 1800-1000. A few lucky souls have logged this, usually sometime between 0600-0688. You can bet the pleasure was well earned, with lots of digging and persistence.

A relatively new Radio Nacional regional outlet in Argentina has made this list because there've been no known North American loggings. Radio Nacional at Viedma, capital of Rio Negro in the south central part of the country, uses just one kilowatt on 5990. Its schedule is not conducive to reception here,

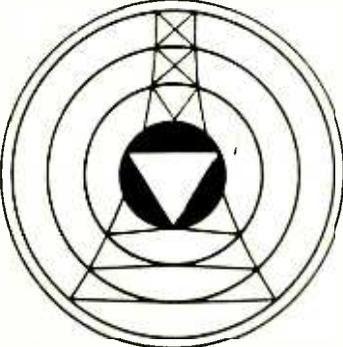
running 1200-1600 and 2000-2300. It does seem to offer some chance for reception just at sign-on or just before sign-off during months when 49 meters is open at those hours.

A new station in Chile is Radio Esperanza at Temuco on the Cautin River in the south central section. The schedule isn't known but it appears this one may be a daytime only operation which means a real problem in hearing it on its 6090 frequency.

La Voz de Samaniego, from the Colombian city of that name, is another South American nearly never heard. It is reported to use 6350 for a half-a-week schedule, Thursday-Sunday from 2300-0030. There've been only a couple of tentative loggings of this in North America.

Logging the Uruguayans is never easy and the roughest of this small group has to be La Voz de Artigas in Artigas. This station's shortwave efforts are restricted to weekends, and even then they are irregular. Activity is most likely to occur when there are major sporting events going on in the country. La Voz de Artigas is listed for 2.5 kW and uses both 4945 and 6076.

So there you are. Twenty of the meanest, toughest, hardest-to-log shortwave broadcasters that ever sent a signal into the sky. Go ahead and try 'em out if you want. Dream the impossible dream. If you really do log even one of these, you can consider your DXing year a smashing success and you'll be the envy of all to whom you tell your story.



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Playing the Name Game:

Identifying Latin American Radio Stations

by Don Moore

"Let's see, need some new stations in the log book. It's 0200, maybe a try on 60 meters. Other DXers report lots of Latin American stations down there. . . . Umm, Spanish . . . Spanish . . . more Spanish. My year of high school algebra I was trying to recall last week. Wow, do they talk fast. . . . How am I ever going to ID them? For that matter, what do I listen for?"

Probably thoughts like that go through the minds of most DXers the first time they try to tune the little shortwave stations of Latin America. If you don't know who you're listening to, it's hard to start counting up stations and countries. IDing local broadcasters in North America is easy, but the Latin Americans are in a different language, and that's only the biggest problem. The solution takes a little time and effort, but is really quite simple. Just learn to play the name game -- in Spanish. Like most games, this one has rules, so let's take a look at them.

What Makes a Name?

In the US and Canada, radio stations are assigned call letters such as WRSC, KFAB or CHIN. By law the call letters must be given at the top of every hour. Often they are the only ID a station uses. Slogans such as "Q Country," "Super Rock 86" or "Lion Country Radio" may also be announced, but slogans change frequently and are in no way official.

No master slogan list exists, so the stations can only truly be identified by their call letters.

Latin American stations are also assigned call letters, but the similarity ends there. If any country has a law that stations give their call letters over the air, it's rarely obeyed or enforced. Occasionally call letters may be heard during sign-on and sign-off announcements, or perhaps in a lengthy-but-rarely-played taped station ID, but no one considers call letters important. At many Latin American stations, the announcers, the secretary and sometimes even the owner won't know the call letters without first looking them up.

In this part of the shortwave world, the only ID that really counts is the station name. To call them slogans would be incomplete. Not only do names identify the station on the air, they give the station its own identity and make it part of the community.

Unlike slogans, names rarely change. The station name is chosen by the owner when making the initial application and appears on the license when the government grants the station frequencies and call letters. The government uses the station name on all official correspondence and in all official station lists.

What Do They Mean?

As a glance at any Latin American station list will show, most station names share a few

common words. The majority begin with "Radio . . ." and most of the remainder with "La Voz de . . ." (The Voice of . . .). Other words that pop up occasionally are "Ecos del . . ." (Echoes of), "Ondas del . . ." (Waves of), "Armonias del . . ." (Harmonies of), and "Brisas del . . ." (Breezes of). More unusual are "Sistema . . ." (System) and "Emisora . . ." (Radio Station). A few rare exceptions use none of these.

Of course, it's the rest of the name -- the part that comes after the initial words -- that gives the station its own unique identity and ties it to the community. Looking at what these mean can be a fascinating insight into how the stations see themselves and the role of radio broadcasting in Latin America. Especially in rural provinces, where television has not yet reached, radio is an important part of the popular culture. Names are a symbol that ties the station and culture together.

Many stations identify with the local culture very directly by using the name of a prominent local geographic feature. The easiest to recognize are stations named after their own city or town, such as Peru's Radio Huancabamba and La Voz de Cutervo. However, you would have to look up the stations' hometowns in an atlas to know that Venezuela's La Voz de Carabobo and Radio Tachira are named after states.

Other stations use the name of a nearby river, like Colombia's Ondas del Ortegaza and Armonias del Caqueta and Venezuelan Ecos del Torbes, or a lake such as Peru's Ondas del Titicaca. Usually names with "ecos," "ondas," "armonias" or "brisas" are followed by the name of a body of water.

Some geographically-named stations think even bigger. Every Andean country has at least one Radio Los Andes. Radio Macarena in Colombia and Radio Illimani in Bolivia, however, are named after specific nearby mountains. Other stations try to identify with a regional audience by naming themselves after that region, as does Radio Oriente (East) in Peru's eastern Amazon lowlands, La Voz del Llano (Plains) in Colombia and Chile's Radio Patagonia Chilena.

Stations which broadcast for a particular audience may choose a name that defines that audience. These include Venezuela's big rocker, Radio Juventud (Youth) and Radio Inca del Peru, one of Peru's principal folk music stations. Numerous Radio Tropicals play nothing but beat-heavy tropical music. Usually Radio Nacional indicates a government-owned public broadcasting



Despite its name, Emisoras Gran Colombia is really in Quito, Ecuador



Radio Ilucan is named after the mountain that overlooks Cutervo, Peru.

station, except in Bolivia, where there are three Radio Nacionales, all privately owned. Radio Illimani is Bolivia's government station. Often Radio Universidad indicates a university-owned public radio station. In Guatemala, Catholic religious stations Radio Mam and Radio Chortis are named after the Indian tribes they serve.

Most of the time, however, religious ownership of a radio station is obvious, as in some of Ecuador's Catholic stations: Radio Catolica Nacional, Radio Jesus del Gran Poder (Jesus of Great Power), Radio Luz y Vida (Light and Life) and Radio Paz y Bien (Peace and Good). Protestants operate Bolivia's La Cruz del Sur (Cross of the South) and Guatemala's Radio Buenas Nuevas (Good News).

Other religious stations appeal to Christian symbolism, such as Radio Amanecer (Dawn) in the Dominican Republic, Costa Rica's Faro del Caribe (Lighthouse of the Caribbean), Bolivian Radio Fides (Faith) and Radio Nueva Vida (New Life) in Colombia. Two Catholic stations in Bolivia, Radio Juan XXIII and Radio Pio XII, are named after Catholic popes. One Catholic station name, however, is anything but peaceful and Christian. Guatemala's Radio Tezulutlan takes its name from an old Kekchi Indian word meaning "land of war."

Perhaps the hope for salvation explains why some nonreligious stations choose religious names. Many stations are named after their town's patron saint, such as Coyhaique, Chile's Santa Maria and Caraz, Peru's Radio San Juan.

History Lessons

A country's historical heritage is important to any culture, as Latin America's radio stations demonstrate. Some of their names reach back before the Europeans came. An

Indian civilization that rose and fell long before the time of Christ gives Ecuador's La Voz de las Caras its name. Ancient Inca emperors are immortalized in the names of Ecuador's Emisora Atalaya and Peru's Radio Atahualpa, while Tawantinsuyo, as in Peru's Radio Tawantinsuyo, is what the ancient Incas called their empire. Even the spirit of Incan sun worship has survived in Peru's several Radio El Sols (The Sun).

Meanwhile, the discovery of America and subsequent destruction of the Indian empires, is remembered by stations Radio Nuevo Continente (New Continent) and Radio Nuevo Mundo (New World) of Peru, and Radio Nueva America in Bolivia.

In southern South America, naming stations after deceased former presidents is quite common, as in Chile's Radio Diego Portales and Radio Presidente Balmaceda. Each is owned by its namesake's political party. (In contrast, Argentina's Radio Belgrano and Bolivia's Radio Alfonso Padilla are private commercial stations.) Other historic names reflect the heat of battle, as does Peru's Radio Grau, honoring a famous 19th century Peruvian admiral, and Ecuador's Radio Tarqui, commemorating a battle in southern Ecuador in which a small Ecuadorian force turned back a much larger Peruvian army bent on capturing the country.

Probably the most confusing Latin American station name is Ecuador's Emisoras Gran Colombia -- after all, why is a station in Ecuador named after Colombia? History gives us the answer. Gran Colombia, or Greater Colombia, was the name of a short-lived union of Venezuela, Colombia, and Ecuador immediately following independence from Spain. The station commemorates those lost dreams of greatness.

If Emisoras Gran Colombia is the most confusing Latin American station name, the award for the most egocentric name would



Radio Tezulutlan may be a peaceful Guatemalan Catholic radio station, but its name means "land of war."

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Latin American Spanish Pronunciation for the DXer

Fortunately for the Latin American DXer, Spanish is one of the world's easiest languages to pronounce. Unlike English, where single letters represent as many as thirteen different sounds, in Spanish each letter represents only one or occasionally two sounds. Spanish pronunciation is predictable and almost all the sounds are found in English.

This guide is just meant to be a general reference for English speaking DXers. Linguistically, particular sounds do have very fine differences from one language to another. However, those distinctions are not easily picked out by the untrained ear, unimportant to the average DXer, and too technical to go into here. There are also some minor regional variations in pronunciation of consonants, but this is mainly outside of the main DX interest areas. For a more thorough treatment, consult a good English/Spanish dictionary such as the *University of Chicago Spanish Dictionary*.

VOWELS

Spanish has only five vowel sounds, each represented by a different letter.

a = the English "short a" sound, as in "father"

e = the English "long a" sound, as in may

i = the English "long e" sound, as in bean

o = the English "long o" sound, as in go

u = the English "oo" sound as in food

Sometimes when preceding another vowel, "u" may have an English "w" sound.

CONSONANTS

The following consonants have more or less the same sound as in English: b, ch, d, f, k, l, m, n, p, r, s, t, w, y, z

c = before a, o and u, this letter sounds like the English "k,"

before e and i, it sounds like the English "s"

g = before a, o and u, the "hard g" of English gate

before e and i, the English "h" sound, as in his

h = only found at the beginning of words, where it is silent, or in the combination "ch" sound

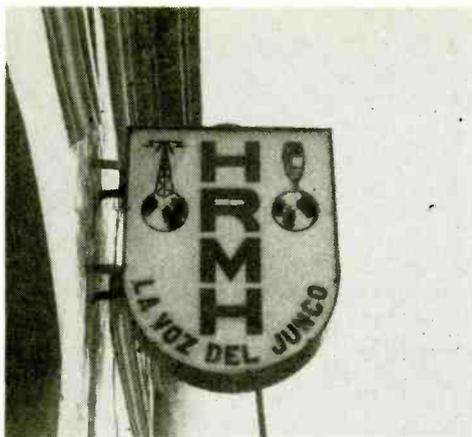
j = English "h" sound, as in his

ll = this double Spanish consonant sounds very similar to the English "y," as in yes

n = the wavy line on top is called a tilde. In Spanish this is considered a separate letter of the alphabet from "n." It sounds very much like "ny" as in the Russian nyet.

qu = this combination equals the English "k" sound. It is always followed by another vowel.

x = normally this has the same sound as in English, however, in words of Indian derivation it has an "h" sound. For example, Mexico is pronounced MAY-he-co. In some Guatemalan Indian words, it has an "sh" sound.



A kind of straw used for weaving hats gives La Voz del Junco its name.

Spanish uses most of the same sounds as English, but with fewer and simpler vowel sounds. Some letters, however, represent different sounds than they do in English. Take a look at the Spanish pronunciation guide included with this article, especially the vowels. Learn to read station names with the Spanish (not English) pronunciations. It's hard to listen for something if you don't know what it sounds like. Improve your ear for Spanish by listening to the big Latin American stations in Spanish, such as HCJB or Radio Havana. Don't listen to the Spanish broadcasts of international broadcasters like Radio Sweden or Radio Japan. Not all announcers at the big stations are native Spanish speakers, and it won't help to understand Spanish with a Swedish or Japanese accent. Soon, with a little practice, it should be easy to pick out IDs on the stronger tropical band stations.

Latin American stations vary greatly as to how often they give station identifications. Some give two or three after each song. Others, it seems, can go for hours without an ID. Identifying a station is basically a matter of carefully and patiently listening at the right time, or for a long time. Many stations do identify themselves at the top of the hour with fancy prerecorded announcements by a different announcer, which tends to stand out from the rest of the program. However, they are not so precise about it as North American stations are. Top-of-the-hour IDs in Latin America can be off by as much as five minutes.

Otherwise, station IDs are mixed in with the DJ chatter between songs and features throughout the hour. Careful listening is required to pick them out. Sometimes the ID stemword will be left off, especially in time announcements. For example, Radio Tropical's DJ might say "En Tropical, las seis menos ocho minutos," or "In Tropical, it's eight minutes before six." Frequently the same pattern will be used for time announcements after each song, giving the DXer several chances at a clear hearing.

When unable to identify a station, the best thing to do is to stay up late until it signs-off, or get up early the next morning

and try to catch the sign-on. Almost all stations come on or go off the air with elaborate recorded ID announcements. These not only include the station name several times, but also the name of the city, province and country in which it is located.

The best accessory for IDing Latin American stations is a tape recorder. The recorder should be kept running all the time while DXing. If at all possible, don't record with a microphone. Use a recorder with an auxiliary input jack and connect a patchcord between it and your receiver. This will give a much clearer sound. A digital counter is a great help at keeping track of interesting spots on the tape.

Relisten to announcements which were not clear at first listening, especially top of the hour announcements. Many IDs will be understandable on the second or third listening. Be careful, though. If listening for a specific word, like a station name, it is very easy to mishear a similar sounding word, especially under poor reception conditions. Be absolutely certain, or mark your log as "possible ID," "tentative" or "presumed."

Alternative Methods

Sometimes either the station doesn't ID, or it's impossible to understand the ID. Other information might be heard which will indicate at least a tentative identification, and occasionally a very definite ID. One of the most useful pieces of information is time checks. They point out which time zone a station belongs to, eliminating some possible countries. All serious Latin American DXers should buy a basic Spanish grammar and teach themselves how to tell time in Spanish.



Radio Chota is one of Latin America's many stations named after their hometown.



Reality at Ecuador's Radio Panamericana is much less grandiose than its name tries to boast!

Of course, it is necessary to keep track of who goes on daylight savings time and when.

Music can also help narrow down which country or region is being heard. Stations everywhere play pop and romantic music, but few outside Guatemala, and probably none outside Central America, play marimba music. Tropical music is common throughout the countries bordering the Caribbean, and in lowland and coastal areas extending down to Bolivia. Ranchera music usually comes from Mexico or Central America, but sometimes is heard on lowland stations in Colombia, Ecuador, and Peru. Andean folk music, as heard on HCJB, is the main fare on Andean radio stations from Ecuador to Bolivia.

With experience, DXers can recognize the different varieties within those musical styles. There are differences between Venezuelan and Colombian tropical music. Types of Andean music include Ecuadorian pasillos and Peruvian huaynos, with finer differences distinguishing between northern and southern Peruvian huaynos.

In addition, DXers should learn to recognize the national anthems of the major DX countries of Latin America, such as Peru and Ecuador. Many stations play these at sign-on and sign-off. Even if the ID is down in the mud, it may be possible to recognize the national anthem. To learn these, check your local library. Some have records of national anthems in their music collections. Otherwise, tape them off the air whenever you hear a strong station signing on or off.

Obviously, hearing the name of the station's city, province or country can be strong proof of identity, but the context of how the name is heard as well as how big and important the place is, are important factors to remember. Be careful. Lima, Peru, frequently makes the news in Ecuador. Tiny Chota, Peru, rarely does. A news broadcast mentioning several provincial cities in Peru, very strongly indicates the station is Peruvian.

Advertisements can also be great sources of tentative identification. An ad for the

Banco de Pichincha surely indicates Ecuador, since Pichincha is an Ecuadorian province. Also, store ads sometimes give prices, and the name of the local currency may be as good as the name of the country. The ad said a shirt cost 16 lempiras -- must be Honduras. Peru uses the inti, Venezuela the bolivar, and Ecuador the sucre. Mexico, Colombia, Chile and Uruguay all use the peso.

If a pair of trousers cost 20,000 pesos, it's probably Mexico, where the exchange is around 2,500 to the dollar, not the other countries where the exchange is only a few hundred to a dollar. For a complete list of Latin American currencies and exchange rates, check a recent copy of *The Wall Street Journal*.

Finally, for the serious DXer who has the interest and time, almost any background knowledge about Latin America may be a help in pinning down where a station is located. Such things as patron saints, holidays, historical events, national heroes, archbishops, and famous cathedrals can be mentioned in radio broadcasts. For example, a mention of Liceo (High School) Romulo Betancourt would likely indicate a Venezuelan station, since Betancourt was a popular president of that country (although sometimes schools are named after famous leaders of neighboring countries too). Current presidents will probably be mentioned several times in news broadcasts, as may be local political parties.

Background reading on Latin America is important. The more knowledge you have at your disposal, the better your chances of identifying a station and getting good program details for a reception report. Be sure to read any Latin American news in your local newspaper and favorite news magazine, and don't forget to check out some books on Latin America from the local library. Serious Latin American DXers should be familiar with *The South American Handbook*. This is the most extensive travel guide available on the area, and has hundreds of pages of useful

LATIN STATIONS 3200 - 3300 kHz

- 3200 **Radio 9 de Abril**, Pulacayo, Bolivia 0000-0200; 1000-0000
- 3205 **Radio Ribeirao Preto**, Ribeiro Preto, Brazil 0000-0300; 0600-0000
- 3205 **Radio Vale Rio Madeira**, Humaita, Brazil 0000-0200; 0800-0000
- 3210 **Radio Trujillo**, Trujillo, Peru 0000-0115; 1100-1300; 2230-0000
- 3220 **HCJB** (domestic service), Quito, Ecuador 0000-0500; 0830-1430; 2100-0000
- 3230 **Radio Sol de los Andes**, Juliaca, Peru 0000-0300; 0900-0000
- 3235 **Radio Clube**, Marilia, Brazil 0000-0300; 0700-0000
- 3240 **Radio Antena Libre**, Esmeraldas, Ecuador 0000-0300; 1100-1300; 2200-0000
- 3245 **Radio Clube**, Varginha, Brazil 0800-0000
- 3245 **Radio Libertador**, Caracas, Venezuela 0000-0400; 1000-0000
- 3250 **Radio Luz y Vida**, Santa Barbara 0000-0400; 2200-0000
- 3255 **Radio Educadora Cariri**, Crato, Brazil 0000-0100; 0800-0000
- 3255 **La Voz del Triunfo**, Santo Domingo Cirdos; Ecuador 0000-0500 (irregular)
- 3260 **La Voz de Rio Carrizal**, Calceta, Ecuador 0000-0330; 1100-0000
- 3260 **La Voz de Oxapampa**, Oxapampa, Peru 0000-0500; 1000-0000
- 3269 **Ecos del Oriente**, Lago Agrlo, Ecuador 0000-0300; 2300-0000
- 3275 **Radio Mara**, Maracaibo, Venezuela 0000-0000
- 3279 **La Voz del Napo**, Tena, Ecuador 0000-0230; 1000-1215; 2200-0000
- 3280 **Radio Huari**, Ayacucho, Peru 0000-0245; 1000-0000
- 3285 **Radio Belize**, Belmopan, Belize 0000-0600; 1100-0000
- 3285 **Radio Televisione Sentinel**, Obidos, Brazil 0000-0300; 0700-0000
- 3285 **Radio Rio Tarqui**, Cuenca, Ecuador 0000-0130; 1030-1330; 2230-0000
- 3289 **Radio Centro**, Ambato, Ecuador 0900-1100
- 3289 **Radio Tayabamba**, Tayabamba, Peru 0000-0500; 1000-0000

Courtesy 1991 *Passport to World Band Radio*. Times are in UTC. Frequencies rounded off to the nearest kHz.

background information. Not only does it give information on things like holidays, patron saints, and cathedral names, it also gives company names for two of the most advertised products in Latin America: banks and beer. If you hear an ad for Cerveza Bavaria, the *SAH* will tell you that that is the most popular beer in Colombia.

In Conclusion

Identifying weak stations broadcasting in a foreign language is never an easy thing to do. As so often in the DX hobby, experience is the catch-word. With each listening session, the ears become a little more accustomed to Spanish pronunciation, and gradually station IDs begin to pop out from the noise. Soon other important DXing words, such as time announcements and products advertised slowly begin to make sense.

Through time and experience, many DXers who have never formally studied Spanish have developed a keen ear for Spanish pronunciation and built up a large DX vocabulary. It takes some time and effort, but there are hundreds of Latin American stations out there waiting to be logged. So, why not give it a shot? Good listening -- or Buena Sintonia. mi

When the VP is the visiting VIP, you could be

Hunting Quayle on Air Force 2

Story and pictures
by Sue Kennedy

It is a cold, windy and downright nasty day in the Texas Panhandle, a great day to stay home, turn on the scanner, sit back and relax.

As inviting as that sounds, I have better things to do. I button up my leather jacket and head towards the pack of photographers and reporters already jostling one another for position on the airport tarmac. Trying to keep warm, they rub their hands together and shielding their ears, each and every one of them looking very much like they would rather be any place else in the world than here.



But we all have a job to do and mine is to get a close-up look at Air Force 2 for *Monitoring Times*.

Just as the final symptoms of hypothermia were about to set in, the cloudcover was broken by a shining blue and silver jet. The Vice President of the United States of

America, Dan Quayle, was on his way to Amarillo. The highly polished 707 touches down lightly and taxis toward the gate. Despite the whine of the jet engines, all I hear around me is the squawking of Secret Service walkie talkies. I hope my scanner is working properly and searching out the active frequencies.

I planned ahead for this one. The time President Bush was in town, I was caught flat footed. No advanced notice was given and I had a hard time finding the frequencies being used. Not this time though. I had some time to prepare and was ready. I even was able to wrangle myself a press pass and get within four feet of the Vice President himself!

When I first heard that Danny Quayle was planning to stop in Amarillo to give a boost to Texas Republican Representative Dick Waterfield's political campaign, I knew this would be a golden opportunity to eavesdrop on Air Force 2. I also thought it would be a great way to get a *Monitoring Times* exclusive look at VIP monitoring.

I called the Office of the Vice President to see what I had to do to get up close. The procedure was simple. Just show up at the air terminal an hour before the arrival of Air Force 2 with my press credentials and present them to the Secret Service agents there. Sounded pretty easy. I had had harder times getting into rock concerts.

The V.P.'s press secretary asked what paper I was working for and I told her *Monitoring Times*. She thought for a moment and said "You know you can't bring any scanning radios with you, don't you? The Secret Service won't let you in with one."

Obviously she knew the publication and what I wanted to write about. I tried to assure her I wouldn't. She said she would put my name on their list, whatever that meant. I would have to devise a way of monitoring by remote control.

The next day I talked to Bob Grove, publisher of *Monitoring Times*. He gave me a



Dan Quayle and Rep. Dick Waterfield

Air Force 2 Frequencies Used in Amarillo, Texas

SECRET SERVICE FREQUENCIES

Charlie channel: 165.375 (busiest freq, close proximity guard)
 Baker channel: 165.7875 (used by Secret Service and advance team)
 Oscar channel: 164.8875
 Sierra channel: 166.5125
 Duplex (paired): 167.6875 (Vice. Presidential limousine link) 171.2875
 165.250: Vice Presidential press supervisor link to A.F. 2
 46.75: Secret Service helicopter

AIR FORCE 2 UHF FREQUENCIES

Several phone patches on UHF pair 415.700 MHz/407.850 MHz. Stations phone patched to were:

CROWN
 CULTIVATE
 BOMB PROOF
 PRESLEY
 ANDY (Andrews AFB)

SUPERVISOR (Dan Quayle) was heard talking to Mr. Baxter about limiting press interviews. Other conversations were centered on arrival times, accommodations, and aircraft servicing.

On UHF frequency 305.00 MHz wideband FM:

Air Force 2 was heard talking to Air Force 1 via satellite. Phone patches were also made via this satellite link to stations PRETENDER, PILLSBURY and SIDESTEP.

This was an uplink channel as only one side of conversation was heard. Downlink channel wasn't found.

nice list of frequencies to start monitoring. He also gave me some codewords to keep an ear out for and wished me good luck. I now had my frequencies, my name on a list and a plan for remote scanning. It was time to get going.

I decided to work it this way. Since I couldn't bring my scanner in, I would leave it in the car. My car would be parked about a hundred yards from Air Force 2 and would be close enough to capture all signals. I would also have my PRO2005 at home searching through the UHF military band for any other active frequencies.

I swung my Grove scanner beam antenna in the general direction of the airport. The new search-and-store module I had just installed would be very helpful in capturing those discrete frequencies. The module would automatically enter the busy frequencies into memory and the automatic scanner recorder would record the voices. So much for the UHF spectrum. Now for the VHF band.

The scanner I would keep in my parked car would be my Regency HX2000. I would have it search between 163.00 MHz and 171.00 MHz. I attached by velcro a General Electric voice activated micro cassette recorder. Connecting a jack from the output of the scanner to the microphone socket on

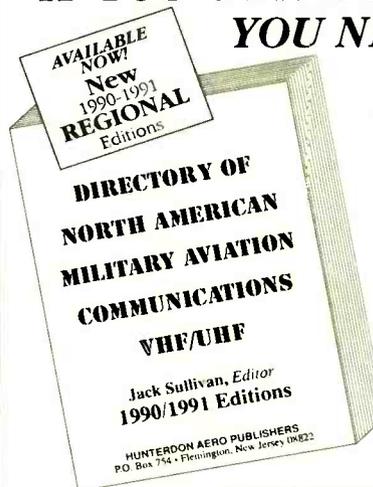
the recorder worked well. When the scanner stopped on an active channel the voice activated recorder would turn on, capturing the signals on tape. I then would have two ways of recording the airwaves unattended and automatically searching out the active frequencies. I started my recorder and search on the PRO2005, mounted the hand held scanner in the car and headed for the airport.

When I arrived at the airport I found that Air Force 2 would be stopping at the Hughes Aircraft Flight Service Station gate. The driveway leading to the FSS was crammed with every kind of vehicle imaginable. There were Amarillo City Police cars, Department of Public Safety cars, ambulances, fire equipment and even unmarked government vehicles. All were sprouting whip antennas as far as the eye could see.

The local TV media were busy aligning their microwave transmitters so they could transmit remote video back to the stations. I hoped all the radios wouldn't bleed over on my scanner and overload it. A uniformed security guard pointed out a parking place in sight of the flightline. I set the recorder on the scanner and grabbed my camera bag.

As I entered the terminal, I was stopped at the door by a pretty woman holding a

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VP limousine and Secret Service agents.

clipboard and talking into a walkie talkie. It had a short stubby antenna, which probably meant it transmitted somewhere in the UHF band. I hoped my scanner was doing its job. She asked my name and what media organization I was with. I gave her my press pass and said I was with *Monitoring Times*.

She looked down at her clipboard and I wondered if this was the "list" that the VP's secretary talked about putting me on. I suddenly had this vision of her saying, "Oh yes, Sue Kennedy, *Monitoring Times*. Agent Bob, arrest this woman!" Instead she handed me a clip on pass and asked me to step into a small room just inside the terminal.



U.P. Press coordination was heard via walkie-talkies on 166.250 MHz.

Inside a big Secret Service agent took my camera bag from me. Looking quite the serious type, he opened every zippered pocket and examined every camera. Holding the cameras up to the light he peered through the lenses. Then he said, "your turn." I knew instantly what that meant.

The agent scanned me with a metal sensing wand. Nothing, no beeps. "You're clean," he pronounced and I was cleared to join the other members of the press gathering outside. "Sue Kennedy, *Monitoring Times*, cleared, coming out." Later I would hear those words again as I reviewed my scanner tapes.

When I stepped outside I was instantly hit by a chilling wind. Off to the north of the field a C-141 Starlifter was opening its clamshell doors. The mouth of the transport jet disgorged three official-looking cars and the Vice President's limousine. I had always wondered how they got the limos around; now I knew.

I loaded my cameras and tried to shake off the chill. Soon I was chatting with members of the media that I knew from local TV stations

and the newspaper. Everyone was complaining about the weather or talking about the security. One commented, "I haven't seen security this tight since Eddie Murphy was in town!"

Standing behind us was a sullen looking Secret Service agent. When he talked into his walkie talkie, I could see the bulge of an automatic weapon underneath his three-piece suit. I briefly contemplated taking his picture but decided he might not like that. He didn't look like the type to mess with.

I did actually see one of them smile when one newsman joked, "The reason the Secret Service are so tight around Dan Quayle is because if the President was to get shot they have orders to shoot the V.P.!" One of the agents actually smirked when he heard it and everybody laughed.

Then we got the word; Air Force 2 was ten miles out. Soon walkie talkies were buzzing all around. A helicopter pilot raced with an agent to a chopper warming up on the pad. I heard the pilot shout to an agent, "We'll be on 46.75!" Was that a low band

frequency? I jotted it down in my notebook. Soon Air Force was taxing toward us. Overhead the chopper hovered thumping noisily.

The huge 707 soon stopped about 50 feet away. Everyone was busy holding their fingers in their ears to keep from going deaf from the jet noise. The engines slowly died and steps were rolled out to the front door of the plane. The door opened up and military brass, local politicians and Secret Service agents poured out. I aimed my camera at the door knowing any second the V.P. would soon appear.

After what seemed to be ten long minutes of holding a heavy telephoto lens in the stiff wind, a familiar face popped out onto the stairs. Standing on the steps the Vice President waved to the press, I clicked away as did everyone else and all you could hear was the whirring of shutters and the popping of strobes.

Soon I was standing within four feet of Vice President Dan Quayle, struggling with the rest of the press pack to get a picture. Luckily I am tall and didn't have much trouble. Some held their cameras up in the air over their heads.

After a few questions, the V.P. and local V.I.P.s rushed to the limos and sped to a political luncheon. I also sped to my car, to see what my scanners had bagged.

As you can see by the frequencies in the sidebar, when Air Force 2 is in town the airwaves are filled with golden opportunities for some high level monitoring. If ever Air Force 1 or Air Force 2 should be flying into your town, heat up the set, sit back and scan away! You never know who you will hear. Maybe you will be able to catch Supervisor talking to Timberwolf (George Bush)!

mt



Secret Service helicopter transmitted on 46.75 MHz.

MT Scores a Hit!

The 1990 Monitoring Times Convention

Photos by Harry Baughn



Welcome to the Convention! The Hyatt-Regency in Knoxville, Tennessee, opened its doors to some 300 shortwave and scanner hobbyists who dominated its lobby with displays and activities for three days.



Did we have forums!? *MT* attendees were hot-footing it to keep up with all that was going on. Here's the prestigious lineup: NASWA representatives Bob Brown Harold Cones and others, Bob Grove, Karl Zuk and other IRCA representatives, Ken Reitz, Larry Magne, Ian McFarland (RCI), Bob Kay, Skip Arey, Fred Osterman (Universal), Alan Weiner (Radio New York Int'l), Thomas Bernie (Cellular Security Group), Clem Small, Gerry Dexter (*Popular Communications*), Larry Van Horn, Gene Hughes (*Police Call*), Jean Baker and friends, Howard Perry (Advanced Electronic Technologies), Jack Sullivan (Hunterdon Aero Publishers), and Glenn Hauser.

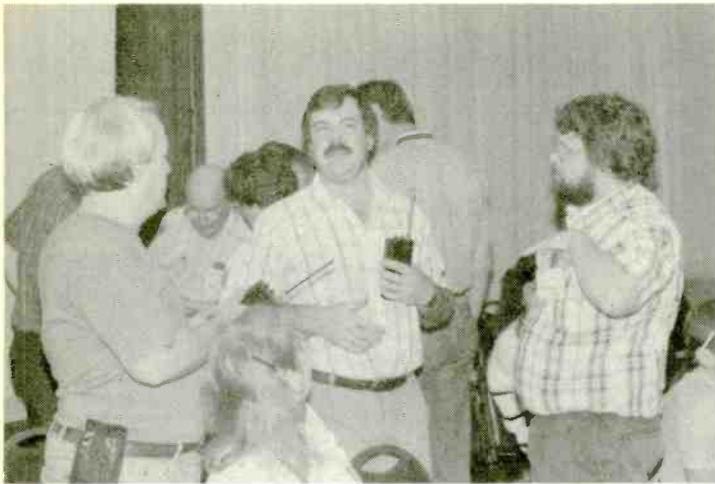


Attendees learned a great deal from knowledgeable exhibitors (some of whom led forums as well); Finally here were some dealers taking our monitoring hobby seriously! We rewarded them by purchasing more from them than they usually sell to a hamfest with many times the attendance. Pictured here is Radio Shack's exhibit; Others who set up displays were OptoElectronics, Systems and Software International, Xenolith Press, Universal Radio, TRS Consultants, DX Computing, KIWA Electronics, Uniden, Somerset Electronics, Hunterdon Aero Publishers, Cellular Security Group, and Advanced Electronic Technologies.

Other exhibitors included shortwave broadcasters -- Radio Canada International, HCJB, WCSN, and Radio for Peace International; clubs and publications -- NASWA (North American Shortwave Association), IRCA (International Radio Club of America), *Northeast Scanning News*, and the Bearcat Radio Club.



Conventioners who visited the Knoxville Air Traffic Control Tower with Jean Baker were treated to an extremely gracious and educational tour of the facility.



Choose your receiver! Scanner and shortwave listeners alike were found raptly intent on discussing their hobby. There was, in fact, no competition between the fields -- only that conflict experienced by a person who wanted to attend a forum with Larry Magne and Ian McFarland (above) and a session on scanning in the same hour!



Bob Grove demonstrated how to test a receiver for sensitivity and other functions, using receivers brought by those attending the forum. Sue, meanwhile, guided other scanner owners in performing speed and frequency restoration modifications.

The tours of the Knox County EMC Center kept folks busy, when they weren't scavenging the left-overs at the Radio Amateur Club of Knoxville's flea market, talking on ham station WA4PYQ or AM 530 kHz. Or they may have been listening to presentations by HCJB, Radio for Peace International, WCSN, Radio Finland, Antique Wireless Association, IRCA or other groups, both formal and informal.

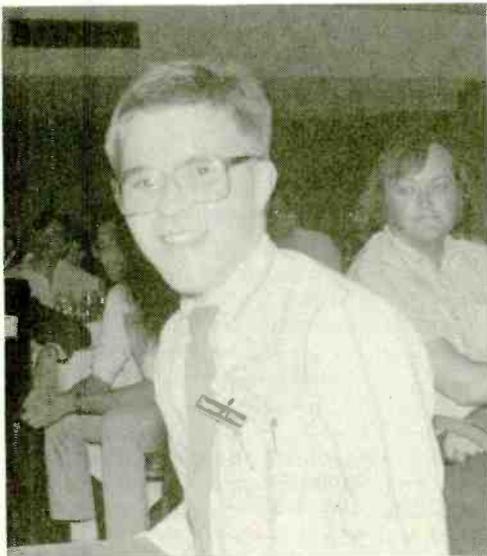




At Saturday's banquet VOA Director Richard Carlson reminded us in vivid examples from recent events of radio's enormous impact on world affairs. Bob Grove expressed the appreciation of all present.



Well-armed with scanners and frequency counters, participants scattered in all directions to find the elusive bugged "fox." Bob Kay presented winner Joe Pilgrim (center) of Marietta, Georgia, with the prize of a Nite-Logger donated by Capri Electronics.



Editor Larry Miller congratulates Steven Price on winning the grand prize drawing.

Prizes! We had prizes! Thanks to ACE Communications who donated the AR3000 scanner, won by Steven Price of Connemaugh, PA (above). Thanks to the many other businesses who donated prizes, including: ICOM, OptoElectronics, MFJ Enterprises, Christian Science Monitor World Service, RCMA, DX Radio Supply, HCJB, International Broadcasting Services, Just Tees'n, Universal Radio, Grove Enterprises, and *Monitoring Times*.

We want to express our heartfelt appreciation to all who participated in this very first convention -- speakers, exhibitors, conventioners. It's impossible to give full recognition in this short pictorial review to all the many people who loaned their talents, and there are bound to be oversights. But all can be proud of a very successful -- and exciting -- first event.



Intense discussions, good fellowship, DXing in rooms, on the balconies, in the park: These were some of the best memories of the Convention ... the pleasure of being with other folks who share the same enjoyment in monitoring the radio waves.

Shortwave Broadcasting

Glenn Hauser

Box 1684-MT

Enid, OK 73702

AFGHANISTAN (non) Radio Free Afghanistan, the semi-clandestine via Radio Free Europe/Radio Liberty facilities, continues on this winter schedule: 0230-0300 UTC in Pashto on 7255-Germany, 9540-Germany, 9555-Portugal, 11770-Portugal; 0300-0330 in Dari on 7295-Germany, 9540-Germany, 9555-Germany, 11770-Portugal; 1330-1400 in Pashto and 1400-1430 in Dari on 17895-Germany, 21510-Germany, 21530-Portugal (Radio Australia's Japanese *DX-Time*) Why do the two morning broadcasts have to be on different frequencies?

ANDAMAN ISLANDS AIR Port Blair has a new engineer, one of the few who is DX-aware and DXer-friendly; so address your reception reports, with return postage, to Mr. Yuvraj Bajaj (Supratik Sanatani, India, *Oz-DX*)

ANGOLA (non?) Voz da Resistencia do Galo Negro, the UNITA clandestine claiming to broadcast from Jamba, has three shortwave transmitters: 0500-0830 on 6135, 1100-1430 on 9850, 1800-2200 on 7100; and at all times on 4880 and 7125; but 7145, 9700 and 11830 have been dropped; tested 11665 before settling on 4880. International Service, Voice of Resistance of the Black Cockerel is on Tuesday, Thursday, Sunday at 2015-2115, half an hour each of English and French (Richard Ginbey, Namibia, Radio Netherlands *Media Network*) Check, except it runs to 2230 (BBC Monitoring) Don't confuse with Mozambique, q.v., which it buries at 7100 (Bob Padula, *Australian DX News*) 9700 has been active subsequently, from 0455 past 0530 (Ernie Behr, Ont., and Al Quaglieri, NY, *RCI SWL Digest*)

AUSTRALIA The additional Radio Australia transmission for servicemen and captives in the Middle East mentioned last month on 21775 and 17630, at 1300-1500, is in fact on many regular frequencies, including 9580 toward the Pacific; includes Kuwait time-checks; bumps the Sunday 1430 airing of *Communicator* (*DX Listening Digest*)

Radio Australia plans to add a mailbag program in the near future; and to add two new 250-kW transmitters at Darwin in two years (Kannon Shanmugam, KS, *World of Radio*) Bring back Keith Glover!

BELGIUM *Brussels Calling*, from BRT has this winter schedule to the Americas: Monday-Saturday 1400-1425, Sunday 1230-1255 on 21810; daily 0030-0055 on 9925, 13675. *Radio World* airs Saturday morning and evening, Monday morning (*World of Radio*)

The French counterpart, RTBF-4, may have to close for lack of funding (Frans Vossen, BRT, *RN Media Network*)

BRAZIL The English program at 0200 from RadioBras on 11745 has been missing. Is it off the air, or somewhere else? (Brian Gilbert, OR, *DXLD*)

Radio Nacional da Amazonia reactivated 15445 after many years, heard at 1300 past 1330, also announcing but not heard on 11780 (Ernie Behr, Ont., *RCI SWLD*) Sometimes 15448 (Bob Padula, Australia) RNA off-frequency, 6183.2 at 2135 (Julian Anderson, Argentina, *Pampas DXing*)

CANADA RCI sometimes carries special relays in Japanese from Radio Japan we hear nothing about in English -- such as a baseball game at 0502 past 0630 on 9510 (Ernie Behr, *W.O.R.*)

CANARY ISLANDS (non) Though some continue to report and even QSL Radio Exterior de Espanya at 2200-2300 on 17715 as coming from here, the following confirms our contention years ago that this is not the case: Even if the program is intended for Canary Islands, the transmission comes from Noblejas, near Toledo, Spain. The transmitting center in Las Masas, Tenerife, was dismantled last in 1988, so Canaries has not been an active SWBC country since then (M. Molano, Spain, *Play-DX*)

CHINA On an Amnesty International list of people detained for

activities in the 1989 Pro-Democracy Movement is Wu Xiaoyong, son of Vice-Premier Wu Xueqian, and Vice-Director of China International broadcast station. His arrest in 1989 was unconfirmed but according to recent reports he was secretly tried and sentenced to 12 years' imprisonment. This is the gentleman who allegedly produced the statement that was read on Radio Beijing, June 4, 1989 (Northwest Regional China Council via Bruce MacGibbon, *DX Spread*)

A senior executive of Radio Beijing has been removed from his post and believed ordered to undergo political re-education, colleagues say. Li Dan, Program Director of the English Service had been held responsible for that broadcast (Reuter via RCI *SWLD*) An earlier report said Li Dan and five others were attending a workshop in Malaysia (San Francisco Examiner via *DX Spread*)

Radio Beijing has made a major overhaul of a transmitter in the Beijing suburbs, allowing additional frequencies for external services (Radio Beijing *Messenger* via *DXS*)

(non) Voice of Democracy was a new clandestine heard for only three days on 8057, with 43-minute broadcasts at 1200, 1400, 1600, 2000 and 2200, addressed to commanders and soldiers of the PLA (Tetsuya Kondo and Toru Yamashita, Asian Broadcasting Institute via Radio Japan)

CONGO A new 100 kW shortwave transmitter 45 km north of Brazzaville built with West German aid has been inaugurated. Two more 300 kW transmitters are planned (AFP via BBCM)

COSTA RICA RFPI has decided to build two 20-kW transmitters to be added to its three lower-powered units; at the new site it can broadcast 24 hours, and the power company has agreed to install three-phase lines capable of servicing 50- or 100-kW transmitters. New high-gain 4-element cubical-quad multi-band antennas will also be home-made, installed on 130-foot tower. RFPI program additions: the issue-oriented *Undercurrents*, from Pacifica in New York, WBAI, weekdays around 2210 and 0140 before the U.N. news; and repeated in one block Saturdays at 2200. UNESCO programs, Tuesday 2100, Wednesday 0030, Thursday 2200, Friday 0130, Saturday 2130, Sunday 2300; *Music from Everywhere*, from Radio Earth, not only Sunday at 2200 but also Thursday 2130, Friday 0100; *Food for the Thoughtful*, Thursday 2100, Friday 0030; all plus the usual repeats later in the night. Frequencies are 21565 and 13630 weekdays until 0300, weekends until 2430; 7375-USB weekdays from 2330, weekends from 0045 (RFPI *Mailbag* Tuesday 2300, Wednesday 0230, Saturday 2000, Sunday 0245)

CUBA (non) International coordination frequency for 6-meter openings is 28885 USB; among the participants are WA5IYX in San Antonio (Arnie Coro, CO2KK, RHC *DXers Unlimited*) That's our old friend Pat Dyer, whose VHF DX reports have appeared in *QST*.

CZECHOSLOVAKIA In its schedule until November 4, Radio Praha International specifies three different transmitter sites; for broadcasts to the Americas between 2230 and 0415, 11990 and 5930 are from Rimavska Sobota at 20-00 E, 48-23 N; 11680 from Velke Kostolany at 17-44 E, 48-31 N; 7345 from Litomysl, at 16-10 E, 49-48 N. Among the programs on UTC days at 0000-0015, 0100-0130, 0300-0330 and 0400-0415 are *DX-Special* and *Mailbag* on Thursday; *Stamp Corner* (fortnightly), *Mailbag* and *Airmail Special* on Sunday. RPI points out that foreign and domestic companies can now advertise on the station (via John Carson, OK)

ECUADOR HCJB has added an English hour, another repeat of



Studio 9, to the Middle East, 1630-1730 on 21480 (RN Media Network) HCJB heard on new 12015 at 0700-0730 (Bob Padula, Australia, RCI SWLD) Program previews for November at 1652, 1952, next UTC days 0052, 0252, 0522: Mondays, *Dateline 90* -- Nov. 5, today's heroes; Nov. 12 & 19, business buzzwords. Tuesday, Nov. 6, *Happiness Is*, mini-tour of Ecuador and the world; Wednesdays, *Ham Radio Today* includes propagation notes, "simply electronics." Thursdays, *Happiness Is* -- Nov. 1, Ecuadorian holidays and folk music; Nov. 22, "five grains of corn". Fridays, *Musica del Ecuador*. Saturdays, *DX Partyline* -- Nov. 3, Ken MacHarg and Radio for Peace International, Neil Carleton's radio stamps; Nov. 10, RFPI part 2, ODXA Perspectives; Nov. 17, SPEEDX, Pacific, Angola; Nov. 24, ANARC, SPARC, EDXC reports. Sundays, *Saluões Amigos* (HCJB)

ETHIOPIA (non) Voice of Oromo Liberation, in Oromifa daily at 1500-1545 and 1900-1945 on 9540; has varied to 9550 and around 9440, believed from a site in Sudan (BBCM)

FRANCE RFI is considering a 24-hour world service in English, just as in French (*Le Monde* via RN Media Network)

GERMANY Radio Berlin International did not merge with Deutsche Welle -- DW simply took over the facilities of RBI, paying a few megamarks rental for transmitters; DW will not continue any RBI program or popular features such as *DX-Club*, and will consider hiring only those ex-RBI staffers who are professionally and politically qualified (Bill Matthews, OH, Radio Korea *SW Feedback*)

GABON AWR's KSDA will relocate its present two 100 kW transmitters to a new site close to the present one at Agat. A third 100 kW will be added. The present property has been bought by a Japanese company which wants it for -- a golf course! High Adventure's relay via KSDA ended last April. The Government of Guam has still not given permission to lease or buy land at Piti for construction of KHBN's own station (Maarten van Delft, Micronesia, *World of Radio*)

GUATEMALA The third harmonic of La Voz del CID, 9941.7, is back as a high-frequency propagation pilot this fall on 29825.1 (*W.O.R.*)

INDIA News gathered during a visit here: Parliament has passed a bill granting autonomy to All India Radio and Doordarshan (TV). The independent Broadcasting Corporation of India will come into being on March 31, 1991, once approved by the President. AIR is still committed to expansion of FM in major cities, in addition to AM and SW. The lower house of Parliament has proposed abolishing English as the joint official national language as a vestige of colonialism; but southern states speaking minority languages oppose this (K. Shanmugam, KS, *W.O.R.*)

INDONESIA RDK Sukabumi heard on 3330 at 1016 (David Vitek, *Australian DX News*) RRI Padang, 6190 has English segment for tourists at 0138-0153 on Wednesday (Lim Kong Jin, Malaysia, *Oz-DX*) Unfortunately during local daytime.

IRAQ Radio Baghdad broadcasts in English at 2000-2200 on 13660 switched unpredictably to 13600 or 13680 at times.

English to the American troops on 11860 at 1000-1200, 1600-1800, 2000-2200 was renamed The Voice of Peace from Baghdad (BBCM) See also Kuwait! This program at 1600 has also been heard on 17915 (RNMN) and 21675 once (SCDX)

For a while, the 13660 transmission was 3 S-units stronger when received on a vertical antenna than on any horizontal antenna; unexplained why polarization varies, and best to be able to switch between them (Vince Bartell, WOMFK, MN, *DX Listening Digest*)

Iraq's clandestine program *Holy Mecca Radio* on 9720 was soon blocked by *Voice of the Arabs*, from Cairo (BBCM) *Voice of Egypt of Arabism* was scheduled at 2020-2220 before the time change, on 17720, 15310, 15170, 15150, and via Kuwait on 13620, plus AM & FM (BBCM)

ITALY Italian Radio Relay Service is upset about Radio France International blocking their only frequency, 9815, between 0600 and 0700; asks for listener protests to be mailed or faxed to the President of Telediffusion de France (IRRS)

KOREA SOUTH Radio Korea is running a lengthy Wednesday series through yearend, *We Are the Koreans Using the Same Language*, interviews with immigrants to the U.S. recorded last summer (*Shortwave Feedback*) After DST, look for the Canada relay one hour later at 1130, on 9700.

(non) Voice of National Salvation, clandestine from North to South, heard at 1700 and 0100 on unannounced 6960 (BBCM)

KUWAIT It took almost a month after the invasion for Kuwaiti shortwave frequencies to come back, presumably actually from the Kabd site in Kuwait, but of course now programmed by Baghdad. *Voice of the Masses*, which had not been on SW for some time, appeared on 6055, 11990 and 21675; the General Service on 13620 and 15495. Arab countries hostile to Iraq soon started blocking -- Saudi Arabia on 15495, then following Iraqwait down to 15490; UAE Radio, Dubai on 21675, incl English 1600 parallel to clear 21605 (BBCM, MacGibbon, gh)

Before the winter time change, Iraq was also using Kuwaiti transmitters for revived clandestine programs in Arabic: *Voice of the Peninsula and Arabian Gulf*, 1300-1500, and *Holy Medina Radio*, 1900-2200 on 6055, 11990, 21675; see also IRAQ (BBCM)

(non) Though supposed to be on shortwave, Kuwaiti exile broadcasts via Egypt were confirmed only on mediumwave 661 kHz, varying to 663, jammed until closing at 2200, calling itself "This is Kuwait," or "Free Kuwait Radio" (BBCM)

LAOS The royalist clandestine mentioned last month on 10200 kHz uses a 100-watt mobile transmitter in the mountains of northern Laos (*Bangkok Post* via BBCM) Yet to be reported by DX listeners.

LEBANON King of Hope, 6280, started a new semi-evangelical service for American troops in Saudi Arabia by turning its antenna in that direction, at 2000-2300 (RNMN)

LIBERIA VOA relay managed to remain on the air long into the civil war, but disappeared in mid-September, so VOA brought up replacement transmitters in Greenville, Bethany, Delano and Philippines (RNMN)

LUXEMBOURG RTL converted its 24-hour service on 15350 from French to English pop music (RNMN) Includes news at 2 minutes before the hour, heard from 2100 past 0130; could this be for troops in Mideast? (Ernie Behr, Ont., *W.O.R.*) Apparently not; something to do with the English service now being on the ASTRA satellite (RNMN)

MALAYSIA RTM Radio One, Kuala Lumpur, in Malay uses 5965 24 hours, and 11930 from 2200 to 1100 (BBCM) The latter not listed in *WRTH* or *PWBR*; guess what -- it's the second harmonic of 5965; sure it's not also audible from 1100 to 2200?

MAURITANIA ORTM continues to drift: between 1940 and 2045 one night from 4840.7 to 4838.2, but the next night on nominal 4845 (L. Botto, G. Zella, D. Monferini, Italy, *Play-DX*) One morning at 0701 on 4839, at 0708 on 4838, 0712 on 4837; next day at 0635 on 4842, by 0655 on 4839. Another day at 0625 opening on 4840, but at 0630 jumped to 4845 (Bruce MacGibbon, OR)

MOZAMBIQUE Interprovincial Network, Maputo, on new 7100 until 2208 sign-off. Don't confuse with Angola, q.v. (Bob Padula, Australia, RCI *SWL Digest*)

NETHERLANDS Though shown in our schedules as starting at the end of September, 11740 may not replace 15560 to North America at 0030 until propagation requires it in December (RNMN)

DX Helper

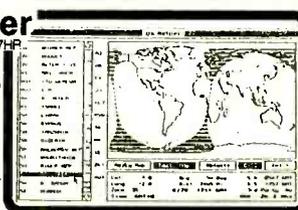
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Shortwave Broadcasting

NORWAY Radio Norway Int'l has long-range plans to expand English to daily, gain a relay in US, resume Spanish (RNI Sat Bcast)

PERU Radio El Puerto, Pacasmayo, La Libertad is new on 4330, strong from 0000 testing past 0100. La Voz del Altiplano, 5815, reactivated at 1230 (Rafael Rojas, Peru, *Pampas DXing*) Economic crisis causes many easy Peruvians to curtail hours. Radio Cora, 4914.5, opens at 0900 but closes shortwave at 1900. Radio Andahuaylas, 4840, closed early at 0145 (Julian Anderson, Argentina, *ibid.*) New in Arequipa is Radio Cultural Comunidad Minera de Cailloma, from 0000 to closing at 0055, announcing 6850 (Rojas, *Play-DX*) Does that mean they were actually on another frequency? (gh) Radio Andina, 4994.9, Huancayo, was silenced in August by an attack from Sendero Luminoso who removed two tubes from the transmitter. Inflation drove one US dollar to 700,000 new intis on the black market; postage for a letter to Europe reached 2,100,000; electricity went up 1000% in one month (Pedro F. Arrunategui, Lima, *Play-DX*) Radio Cora, 4914.6, welcomes reports by fax to: X 51 /14-336134. Listeners Corner at 0300 (Giuseppe Zella, *Play-DX*) On a visit to Radio Tacna I was told by Mrs. Yolanda Viuda de Caceres that one of her sons, a technical engineer, built the emergency transmitter, adapting a ham transceiver, and uses no more than 200 watts, only on weekends. Heard at 0005-0025 on 6571.4 parallel to 9486 (Julian Anderson, *Pampas-DXing*)

PHILIPPINES A bomb damaged one shortwave antenna tower of VOA north of Manila. It left a large crater but did not affect transmissions (RN Media Network)

SAINT HELENA Radio St. Helena was surprisingly easily heard during the MT Convention Saturday from before 2000 until 2100 on 11092.6 SSB as relayed by Cable & Wireless. The DX special took phone calls from David Alpert in New York, Jean Burnell in Newfoundland, and others. Though a 700' Beverage was set up, it could be heard on a much shorter wire and even on a portable whip (gh, with a NASWA DXpedition to a Knoxville park--Kevin Atkins, Bob Brown, Harold Cones, Alan Johnson to George Zeller) Verification by special QSL card if 3 IRCs sent only to: Stora Tuna DX Club, Box 5018, S-78105 Borlange, Sweden (Dario Monferini, RCI *SWL Digest & W.O.R.*)

SAIPAN KFBS dropped German, but added Mongolian, 1125-1530 on 12025 (Maarten van Delft, Micronesia, *W.O.R.*)

SEYCHELLES FEBA has been carrying programs from Trans World Radio on 100 kW 9770 at 0000-0057 in Telugu and Tamil (*DX Listening Digest*)

SICILY (non) Country-counters have relied on RAI 6060 coming from Caltanissetta, but since late August this frequency was moved to a 100 kW transmitter near Rome, for better service to the Mideast after 0030 with *Nottuno dall'Italia* (Dario Monferini, *Play-DX*)

SOLOMON ISLANDS Honiara sometimes stays on 9545 much later than scheduled, heard once until 1158 (Bruce MacGibbon, OR, *DX Spread*)

SUDAN Radio Omdurman, 11633, very strong at 1531 with English news, 1538 ID, rock music request program, heavy reverb DJ female, inviting mail to Box 572 (Peter Bunn, Australia, *Oz-DX*) English at 1530-1600 one day on 11632.1, the next on 11631.1 (Roland Schulze, Germany, *Fine Tuning*)

SWEDEN With Portuguese dropped, Radio Sweden added an English broadcast to Latin America at 2330; retimed to North America at 0200 and 0330, all on 9695 and 11705, but still best heard at 1530 on 21500, 17880. George Wood said *Sweden Calling DXers* was in jeopardy.

SWITZERLAND Red Cross Broadcasting Service is active during the week following the last Sunday of each month: Oct. 28, Nov. 25, Dec. 30, Jan. 27, Feb. 24; to North America UTC Tuesday and Friday at 0310-0327 on 6135, 9650, 9885, 12035. Also on Monday and Thursday to Asia at 1310-1327 on 21695, 17830, 15570, 13635, and via Beijing on 11695 and 7480 replacing 9620 (via Kevin Klein, Ben Krepp, Swiss PTT)



TAWAN WYFR programs via VOF, effective to March 30: English 1302-1517, Hindi 1517-1602 on 11550; Mandarin 1102-1602 on 5275, 1202-1602 on 9280; 2100-2400 on 6300; 2100-2300 on 9270, 2300-2400 on 11550; 2100-2200 on 9955, 2200-2400 on 9465; Russian 1505-1705 on 9955 (*DXLD*)

TRISTAN DA CUNHA After seeing a TV documentary on Tristan, I wrote to ZOE; my letter took a month to reach them, and theirs took almost four months to reach me. J.B. Kerr, Acting Administrator of the island revealed that 3290 (listed as 40 watts) had added a morning broadcast at 0709-0815 GMT, along with 1230-1330 and 1600-1700, all Monday-Friday only (Ed Cichorek, NJ) At 12.5-W, 37-S, Tristan is almost an hour of sun time behind UTC and there is as much seasonal variation as in mid-America, so propagation at sign-on to the dark side of the planet, the Americas, ought to be possible at least during the southern winter. Start losing sleep next May!



UKOGBANI at 1330, BFBS moved briefly to 21500 to avoid Dubai on 21735, but VOA took over that frequency so BFBS went back to 21735; then VOA took over 15195, so BFBS moved to 15390. BBC added a special service of its own, *Gulf Link*, Monday-Friday 1645-1700 on 6040, 11720, 15120; repeated at 0445 on 11760, 15245, 17815 -- poorly heard in North America and presumably some or all frequencies are via relays such as Cyprus (*W.O.R.* and RCI *SWLD*)

USA The State Department inserted messages to hostages in Iraq on VOA broadcasts at :08 past certain hours, curtailing the news, such as 1208, 1808, 2108, and 0108 -- even on beams to Latin America (*W.O.R.*)

KGEI's original G.E. 50-kW transmitter still works and doesn't cost much to operate, but the site in Redwood City is bothered by urban growth, so a new 50 kW may be installed further south on Interstate 5, where there is a lot of cheap land (Jose Holovaty, KGEI, interviewed by Jaime Baguena on Radio Nederland's *Radio-Enlace*)

USSR Radio Moscow's World Service in Russian includes a church service on Sundays starting before 2030 on 15125, 15180; seems from a different church or group each week. So RM has joined the flood of religious broadcasters -- what's next? (Ernie Behr, Ont., *W.O.R.*) On winter time presumably one hour later and different frequencies

Pirates in the Moscow area: Radio Kardinal announces 1607 kHz, estimated 200 watts, address in Serpukhov, but heard at 2130-2150 on 1616.5. Radio Belomorkanal, in the northern part of Moscow city, heard between 1624 and 2248 on frequencies varying between 1703 and 1724 kHz, plus second harmonics above 3400 (Nekrasov, Moscow, *Play-DX*)

ZIMBABWE (non) Radio Truth, clandestine from South Africa, was scheduled daily on 5015: 0400-0417 Shona, 0417-0430 Ndebele, 0430-0500 English; 1700-1717 Shona, 1717-1730 Ndebele, 1730-1800 English; the 0430, 1700 and 1717 broadcasts are repeats. Then the Johannesburg *Star* reported that South Africa had silenced the transmitter in the Transvaal. Radio Truth denied, but said it might voluntarily close due to improvements in the ruling party (BBCM) Still heard the following week at 0425 (Al Quaglieri, NY, RCI *SWLD*)

Does this whet your appetite for more? Sample gh's publications *DX LISTENING DIGEST* and *REVIEW OF INTERNATIONAL BROADCASTING* for \$2 each; 10-issue subscriptions \$21 or both for \$40, in North America, US funds on a US bank to Glenn Hauser, Box 1684-MT, Enid, OK 73702.

DX news reports conclude each *SWL DIGEST* on RCI, UTC Sun 0036 on 9755, 5960; 1836 on 17820, 15260, 13670; 2236 on 15325, 11945; 2306 on 11730, 9755; Tue 1333 on 17820, 11855, 9635 and C-SPAN Audio 1.

Totally different is *WORLD OF RADIO*, half an hour weekly; on WRNA, New Orleans: UTC Thu 0200 (or 0130), 1630; Fri 0000 and 0130; Sat 0400; Sun 0030 and 2130 -- on 15420 until 2400, 7355 until 0400, then 6185 (these are winter timings after DST); and on RPI, Costa Rica: Fri 2000, 2330; Sat 0315, 0645, 1015, 1930; Sun 0215, 0845, 2230; Mon 0515, 1145; Tue 2230; Wed 0200, 0545, 0915 -- on 21565 and 13630 weekdays until 0300, weekends until 2430; 7375-USB weekdays from 2330, weekends from 0045. Late-night repeats often run as much as half an hour early.

Broadcast Loggings

Thanks to our contributors -- Have YOU sent in your logs?
Send your loggings to **Gayle Van Horn**, c/o Monitoring Times.
English broadcast unless otherwise noted.

0030 UTC on 7355

USA: WRNO. Universal Radio commercial into "World of Radio" show. Station IDs and promotionals. Audible on 15420 kHz at 1525 UTC. (John Carson, Norman, OK) (Jack Davis, Birmingham, AL)

0040 UTC on 11710

USSR: Radio Moscow. Report on preparing the nation for a capitalistic society. Parallel frequency 12040 kHz. (Bob Fraser, Cohasset, MA) (George Neff, Lutz, FL) (Robert Babin, Shrewsbury, MA)

0100 UTC on 9565

RWANDA: Deutsche Welle (relay). International news and ID. (Mark Seiden, Miami, FL) (Robert Babin, Shrewsbury, MA)

0100 UTC on 7414.6

PIRATE: Hope Radio. Station ID and declaration of "fighting injustice." Fair signal and co-channel interference from two unidentified pirates. (Mark Seiden, Miami, FL)

0107 UTC on 11800

ITALY: RAI. News report on the nation's 45th Spanish Film Festival. (Bob Fraser, Cohasset, MA) (Donald Westbrook, Columbus, OH)

0110 UTC on 9475

EGYPT: Radio Cairo. Spanish/English. Nightly news with decent audio for a change. English world news at 0200 UTC. (Mark Seiden, Miami, FL) (Robert Babin, Shrewsbury, MA) Audible on 9900 kHz at 2110 UTC. (Frank Hillton, Charleston, SC)

0128 UTC on 4799.8

GUATEMALA: Radio Buenas Nuevas. Spanish. Religious text to canned ID at 0130 UTC. Piano instrumental and scripture readings. Additional Guatemalan Radio Kek'chi heard on 4844.5 kHz at 0155 UTC. (ed.)

0145 UTC on 4830

VENEZUELA: Radio Tachira. Spanish. Lady pop vocalist to Tachira ID. Local time check and Latin guitar ballads, battling two co-channel stations. (ed.) (William Kruger, Miami, FL)

0213 UTC on 13745

UNITED KINGDOM: British Forces Broadcasting Service. Excellent fast-paced DJ format, with 60s era and British pop music. Frequent IDs noted as "BFBS," and "These programs are from BFBS, for the British forces in Saudi Arabia and the Gulf, on Operation Granby." Announced schedule as: "0200-0230 on 7125, 9640, 13745 and 21735 kHz." Also announced, "0930-1000 on 15205, 17695, 21735 ; 1330-1400 on 15195, 17695, 21735 kHz."

Programming includes messages and music dedications for the troops, news bits and sports report. Interesting to note that BFBS' last broadcast were to the troops during the Falkland Islands war. Try sending your reception report to U.K. address: BFBS (SSVC), Attention: Station Manager, Bridge House, North Wharf Road, London W2, England. Any DXers with an additional or new address, please forward to me. "Thanks," from Gayle Van Horn

0220 UTC on 4980

VENEZUELA: Ecos del Torbes. Spanish. Latin vocalist to canned ID. Local time check and easy-listening tunes. (ed.) Monitored to 0255 UTC. (George Neff, Lutz, FL)

0228 UTC on 21725

UNITED ARAB EMIRATES: Radio Abu Dhabi. Arabic/English. Koran recitations. (John Carson, Norman, OK) History on American Indians and ID at 2230 UTC on 11985 kHz. (George Neff, Lutz, FL)

0232 UTC on 17875

ECUADOR: HCJB. Latin vocals and talk on the Colombian drug war. (George Neff, Lutz, FL) Religious music and excerpts from "God At the Controls" on 17875 and 15155 kHz at 0357-0430 UTC. (Lloyd Van Horn, New Orleans, LA) (Bob Fraser, Cohasset, MA)

0300 UTC on 15290

BULGARIA: Radio Sofia. News and review of Bulgarian events and developments. (John Carson, Norman, OK) Monitored on 15350 kHz at 2138 UTC. (Craig Young, Ft. Devens, MA) Report on 1990 Budget Hearing at 1850 UTC on 15330 kHz. (Bob Fraser, Cohasset, MA)

0300 UTC on 7345

CZECHOSLOVAKIA: Radio Prague International. International news, travel tips for Europe and Bill Bathurst's "Observer." (John Carson, Norman, OK) (Bruce Grohas, San Antonio, TX)

0310 UTC on 17880

TURKEY: Voice of Turkey. Easy-listening vocals to station ID. "Turkish Album, show on ancient excavations in Ankara, and Turkish folk tunes. (Lloyd Van Horn, New Orleans, LA)

0340 UTC on 6015

ZANZIBAR: Radio Television Zanzibar. (Swahili). Announcements to African hillside tunes. Pop vocals to interval signal at 0400 UTC. Time tips signal, ID and news report. (Frank Hillton, Charleston, SC)

0430 UTC on 4800

LESOTHO: Lesotho National Broadcasting Service Lesotho. Fair signal for pop music program and chat in African language. (Robert Babin, Shrewsbury, MA) (Donald Westbrook, Columbus, OH)

0435 UTC on 11825

FRENCH POLYNESIA-TAHITI: RFO. Tahitian/French. Soothing Polynesian music program to 0500 UTC. International news items in French to ID. Audible

parallel on 15170 kHz. (Henry Magers, Monterey, CA)

0510 UTC on 11845

WEST GERMANY: Deutsche Welle. "European Journal," economic news and political commentary. (John Carson, Norman, OK)

0600 UTC on 7215

COTE D'IVOIRE: Radiodiffusion Television Ivoirienne. French. Melodic interval signal to sign-on ID, "Ici Abidjan Radiodiffusion Ivoirienne." Frequency schedule and national news. (Joseph Kolb, Newark, NJ) (Robert Babin, Shrewsbury, MA) (Donald Westbrook, Columbus, OH)

0602 UTC on 9765

MALTA: Voice of the Mediterranean. ID/frequency schedule and Maltese travelogue. (George Neff, Lutz, FL) Phil Collins music, IDs and current events in Malta at 0625 UTC. (John Carson, Norman, OK)

0715 UTC on 9480

MONACO: Trans World Radio. Fairly strong signal for Chuck Swindle's religious program. He sounds a lot like George Bush. (Christopher Grawburg, Wilson, NC) (Bruce Groham, San Antonio, TX)

0810 UTC on 11715

USA: KNLS-Alaska. Discussion about Alaskan totem poles and free Bible offer. Comments about this week's phrase "Going against the grain" and its interpretation. (Christopher Grawburg, Wilson, NC)

0830 UTC on 11810

GUAM: KTWR. Station ID and contemporary Christian music. Taped Bible study program with intermittent fading. (Christopher Grawburg, Wilson, NC) Audible at 0845 UTC on 15210 kHz. (Sam Wright, Biloxi, MS) (Bruce Groham, San Antonio, TX)

1007 UTC on 15010

VIETNAM: Voice of Vietnam. World news to editorial on Germany's reunification. (Craig Young, Fort Devens, MA) Monitored on 15010 kHz at 2250 UTC. (Robert Babin, Shrewsbury, MA)

1223 UTC on 12025

MONGOLIA: Radio Ulan Bator. Regional music vocalist to sign-off IDs at 1230 UTC. (John Carson, Norman, OK)

1233 UTC on 17535

GREECE: Voice of Greece. Local Athens time check, weather forecast, and news coverage on Cyprus. Beautiful Greek vocalizing. (Betsy Robinson, Clinton, TN) (Lloyd Van Horn, New Orleans, LA)

1234 UTC on 9750

SOUTH KOREA: Radio Korea. "Seoul Calling" features about an international choral festival. "Let's Learn Korean" at 1255 UTC. (John Carson, Norman, OK)

1430 UTC on 21490

AUSTRIA: Radio Austria International. Station sign-on, international news and sports report. Comments on the Middle East crisis. Monitored on 13730 kHz at 1648 UTC. (John Carson, Norman, OK) Editorial on 9870/9875 kHz at 0130 UTC. (Bob Fraser, Cohasset, MA)

1500 UTC on 13770

NETHERLANDS: Radio Netherlands. Tom Myers' Happy Station show with letters and B'd greetings. Chat and comedy routine to sign-off at 1525 UTC. (Lloyd Van Horn, New Orleans, LA)

1842 UTC on 15510

AFGHANISTAN: Radio Afghanistan. Commentary on higher education for the nation and discussion on the religion of Islam. Station ID at 1850 UTC. Monitored to French service at 1930 UTC. Parallel frequencies 9645/17745 and 9485 kHz. (Stephen Price, Conemaugh, PA)

1850 UTC on 17605

BONAIRE: Radio Netherlands relay. "Newline" show on the Liberian revolution. (Bob Fraser, Cohasset, MA) Astronomy show on 15560 kHz at 0110 UTC. (Craig Young, Ft. Devens, MA) "Newline" heard also at 0330 UTC on 6165 kHz. (John Carson, Norman, OK)

1900 UTC on 17590

ISRAEL: Kol Israel. American Rabbi Mark Angel talks about the gap between the Reform and Orthodox faiths. Continued talk on "The Love of God" and clarinet solo. Excellent signal. (Betsy Robinson, Clinton, TN) "Israel News Magazine" and "Letter From Jerusalem" heard at 2140 UTC on 15640 kHz. (Craig Young, Ft. Devens, MA) (Bob Fraser, Cohasset, MA)

1915 UTC on 17870

LIBERIA: Voice of America relay. "African Panorama" show on South Africa, Liberia and U.S. aid to Togo. Parallel heard on 15600 kHz. (Bob Fraser, Cohasset, MA) (T.D. Leinweber, Blythville, AR)

1925 UTC on 15265

QATAR: Qatar Broadcasting Service (Arabic). Traditional Middle Eastern vocals to program feature about Mohammed. Arabic instrumentals and comments to 2000 ID and newscast. (Frank Hillton, Charleston, SC)

2026 UTC on 15095

SYRIA: Radio Damascus. Station ID and Middle Eastern music. Fair signal for "Welcome to Syria" feature. (George Neff, Lutz, FL) Monitored to 2135 UTC. (Craig Young, Ft. Devens, MA)

2100 UTC on 15215

ALGERIA: Radiodiffusion-Television Algerienne. Arabic/English. Arabic newscast to English pop vocals. Announcer stated that the next three songs had a "message in the music." Titles included "Money for Nothing," "So Far Away" and "Brothers in Arms." (Walter Sweikhart, Montgomery, AL)

2132 UTC on 17875

CANADA: Radio Canada International. Environmental feature on global management. DX show on 9755 kHz at 2332 UTC. (George Neff, Lutz, FL) (John Carson, Norman, OK) (Brian Bagwell, St. Louis, MO)

2215 UTC on 4795

CAMEROON: Cameroon Radio Television-Douala. French. American/French pop vocals. Station ID and DJ chat. ID/frequency quote, national anthem to sign-off at 2305 UTC. CRTV-Yaounde heard on 4850 kHz to 2300 UTC. (ed.)

Utility World

Larry Van Horn

c/o MT, P.O. Box 98
Brasstown, NC 28902

More on the Mossad

Who's that lady with the strange accent, who's that lady?

That lady, as I mentioned last month is the Israeli's CIA -- The Mossad. If my mail and this column's loggings section are any indication, not only is there interest in these stations, but there are a lot of questions about what they are and what they do. Last month's tease was only the tip of the iceberg. Now here is the rest of the story.

The Israeli Mossad is a worldwide operation. From US military spies to the intelligence needed for the raid on Entebbe, Mossad agents have had a hand in each operation. No doubt, the mystery "phonetic alphabet" stations heard throughout the shortwave spectrum have played a major role in getting messages out to their agents worldwide.

The headquarters of the Mossad is located in Tel Aviv. From atop an office building in this city, signals are sent out by microwave and UHF to shortwave transmitters located throughout Israel.

Several years ago, shortwave listener Greg Mitchell, while staying at a hotel just outside Tel Aviv, noted signals from the "alphabet stations" blasting through on his shortwave receiver. He noted up to twenty different transmissions during the hour. Most were heard on the hour and half hour.

These transmissions consisted of long lists of letters. These letters are spoken phonetically (Alpha, Bravo, Charlie, etc). The announcers of these broadcasts are female and probably like the U.S. numbers stations, automatic machines do the actual announcing.

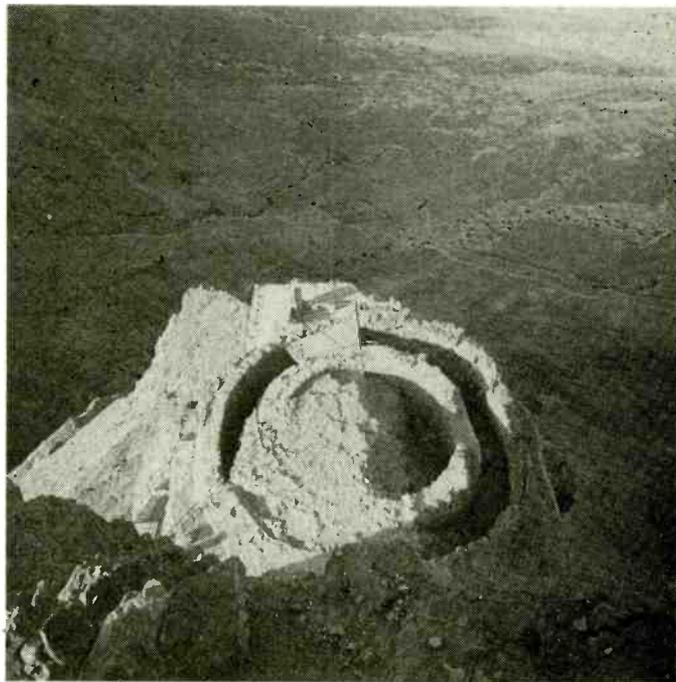
According to Mitchell, the tapes with the messages are prepared and sent via telephone, UHF or microwave links to over 20 shortwave transmitting sites in Israel. These transmitters range in power from 10 to 20 kW and use suppressed AM carriers or sideband depending on where the messages are destined for.

Mr. UK across the pond picks up the story from here. "Most of the call signs can be heard on two or more frequencies simultaneously, higher frequencies being used during daylight hours. Just prior to scheduled broadcast time, one can hear the frequencies to be used keyed up using the appropriate call sign or just part of it."

Sometimes a call sign not relevant to that particular frequency is used, whether in error he is not sure, but at the scheduled transmission time the correct call sign will be sent. Table 1 lists call signs and broadcast times.

Table 1
Israeli Mossad call sign list

ART H+00 H+30	RCH H+00 H+30 (not regular)
CIO H+45	SYN H+30
EZI H+00 H+30	ULX H+00 H+30
FLU H+00 H+30 (not regular)	VLB H+15 H+45
GBZ H+00 H+30 (not regular)	YHF H+00 H+30
JSR H+00 H+30	BAC (not regular)
KPA H+00 H+30	TMS (not regular)
MIW H+15	YLF (not regular)
NCJ H+00 H+30	EZI transmits on following hours:
PCD H+30	0500 0600 1100 1200 1515 1720
	1800 1900



Masada's ruined fortress: A symbol of Israeli resistance

Mossad broadcasts are widely heard throughout the world on a variety of frequencies. The list of frequencies in Table 2 represent reported frequencies over the last several years including now inactive channels represented by an '#'.

What does a phonetic alphabet broadcast sound like and what is the format of their messages?

Call signs like those in Table 1 are repeated for four to five minutes. All messages consist of five-letter groups and are given in the following format:

"VLB" - repeated for about three minutes

1. "Message, message"
 2. "Group 34, group 34"
 3. "Text, text"
 4. "APKNC BNVGT OLIUY GFDWP . . ."
 5. "End of message"
- "Repeat, repeat"

- (Items 1 through 5 then repeated once more)
6. "End of transmissions"

Single figure codes are often given after the call sign -- usually a two which indicates no message (usage much like a marine DE/CQ station marker). It has been reported that the number one in the call suffix indicates a transmission for test purposes. The numbers may also be a 0, 3 or 9. There also have been suffixes noted with number/letter or letter/number combinations (e.g. - 1D and X2). The meaning of these calls and others are as yet unclear.

When codes are given after the call sign NO MESSAGES are sent.

When only the three-letter call sign is heard then a message will follow. The same messages are transmitted at exactly the same time each day, and may run for several days before they

Table 2
Israeli Mossad number stations

2120	MIW	6505	VLB
2270	JSR/RCH	6745	CIO/CIOX2/CIO1D/MIW
2515	VLB	6790	CIO
2743	ULX/YLX	6840	CIO#/EZI
2953	SYN	7115	ART
3150	FLU/PCD	7445	KPA/KPO
3270	KPA	7540	JSR/VLB
3417	ART/NCJ	7605	ART/ULX/VLB/XLE
3840	YHF	7918	VHF/YHF
3930	ULX/VLB#/VLX#/YLX	8127	TMS
4035	YLF	8330	FLU
4056	FLU	8425	SMN#/SVN#/SYN# (moved to 8465)
4270	MIW/PCD/PCD9	8465	MIW/SYN
4447	NCJ	8640	MIW
4560	BAC/YHF	8802	YHF
4625	VEB#/VIB# (moved to 4670)	8925	CIE#/CIO#/KPA#/SYN#
4665	VLB (replaced 4670)		/VUB#
4670	VLB/VLB9 (moved to 4665)		
	/XLE	9130	EZI
4780	KPA	9325	CIE/CIF/CIO
4880	ULX	9965	MIW
4882	GBL/GBZ/ULX	10125	CIO
4987	YLF	10820	KPA
5085	RCH	11565	CIO/EZI/VLT
5091	JSR/RCH	12412	KPA#
5230	BAC#/MIW2/ULX/YLX	12747	MIO/MIW/MLW
5295	JSR/NCJ	12950	SYN/VIB/VLB/XLE
5437	ART/NCJ/ULX/YLX	13150	CIO#/KPA# (moved to 13921)/VIB#
5630	MIW/SYN		
5643	SYN	13291	CIO
5670	MIW#	13533	EZI
5670	Various calls	13921	CIE/CIF/CIO/KPA
5820	PCD/YHF	14750	KPA
5910	BAC/YHF	15980	EZI
6270	GBZ/GNZ/JSR/ULX/YLX	17170	MIO/MIW/MLW
6500	FLU		

are changed.

Occasionally a call sign will be transmitted continuously including a special code, (e.g. - CIO B0B86 or SYN 97144).

Also, other call signs may be heard on a particular frequency as well as the expected call sign. When these are heard they are nearly always much weaker in strength. This may be a fault at the transmitter site or is an indication, as I mentioned earlier, of various power levels and more than one transmitter site in use.

Even though the messages sent by the alphabet phonetic broadcast are coded, you can still use these broadcasts to sort out Middle East tensions. Your chances of decrypting one of these messages is nil to none. I would say, however, that keeping some records on these broadcasts for those interested in the Middle East would be of benefit. You should keep records on when the messages occur and carefully log the overall nature of these messages.

There are several things you should watch for. First, record how often different groups are sent in the messages. Second, record the length of the messages (number of groups, etc). Third, be sure to record the time/frequency/day of the week with the information you have noted. Be sure to tag possible world events with the broadcast for later analysis. You can then use these statistics in conjunction with Middle East and worldwide events to see how the Israeli intelligence community reacts to different situations.

By doing the above you might get to the point where you can foresee the future headlines before they happen, so to speak. While you won't know what each specific message says, your traffic analysis could give you some clues about what's happening in the world. Many governments throughout the world use these same methods of traffic analysis to keep tabs on their enemies.

Of course, any new frequencies or call signs you might

notice are especially welcomed. I am particularly interested in what is being heard in areas outside of North America. I believe these broadcasts are worldwide and folks outside of this continent hear other broadcasts we do not hear. I would like to thank Mr. UK, Bob Grove, Ute World log reporters and several who want to remain nameless in the preparation of this month's feature and I especially appreciate those who responded so quickly after last month's column which also addressed this subject.

Speaking of Mr. UK . . .

Yep, our faithful reporter from across the pond has checked in again with some Canadian frequencies for CANFORCE military. Without further ado, let's get with it:

Teletype circuits: VDD: 4824 7985
VEL: 2401 4738 7923 11041 14521
14660 14812

Airways stations and frequencies include:
Trenton: 6705 6735 6753(Wx) 8989 9006 11214 11233 13207
13257 15035(Wx) 17995 18012 23250

Lahr (West Germany): 3092 4704 5690(Wx) 6705 9006 11233
13231(Wx) 13257 15031 18012

Halifax: 3153 4560 4739 5684 5718 6693 6716 6746 8993
9010 11249 13254 15035(Wx) 18027

Thanks a bunch for the check-in, Mr. UK, and we hope to hear from you again real, real soon.

Middle East buildup

Several reports have reached my desk concerning the Middle East buildup of US and foreign forces. A lot of activity has been heard by monitors all over the world who have listened to our forces in the Saudi peninsula.

Middle East Air Traffic Control (ATC) channels listed in last month's column have been busy from late afternoon into the early evening with a lot of military traffic on these frequencies. As I have stated many times in this column, a good frequency to hear over here is 11300. It has been hopping as usual.

Coronet flights have been heard transporting fighter aircraft across the pond into the Gulf region. Both ATC and military channels have been carrying this traffic. Don't overlook the NAT MWARA family of channels, as most of the aircraft start their trek across the Atlantic over here and consequently use these frequencies initially.

Even the FLTSATCOM military satellites have been carrying traffic from the Middle East. The Atlantic 23 degree west bird in the DOD wideband channels has had some clear voice associated with Operation Desert Shield.

MAC aircraft associated with Middle East deployments have been using special call signs. Instead of the normal call sign (i.e. - MAC 50860, etc.), Desert Shield MAC aircraft are using call signs such as: MAC 010 SM (special mission?) or MAC011 SK.

David Moisan was probably one of only a few to learn about the C-5 crash in West Germany. He was listening to AF GCCS channels (list published last month) when a MAC aircraft was trying to get a phone patch Phantom through Croughton and was put on hold. They mentioned the emergency at Ramstein AFB.

Well, time to check out some of what you have been hearing this last month. Now it's Ute World logging time.

Utility World

Utility Loggings

Abbreviations used in this column

All times UTC, frequencies in kilohertz. All voice transmissions are English unless otherwise noted.

AM	Amplitude modulation	ISB	Independent sideband
ARQ	SITOR	LSB	Lower sideband
CW	Morse code	RTTY	Radioteletype
FAX	Facsimile	UNID	Unidentified
FEC	Forward error correction	USB	Upper sideband
ID	Identification		

- 421.0 PCH-Scheveningen Radio, Holland, with a QOG in CW at 0055. (Bill Kiely, Eislinore Rise, Middleton, County Cork, Ireland) *Thanks for the nice comments, Bill, and welcome to the column. Please report often. -- The Chief.*
- 1660.0 JA2SXV-Beltsville, Maryland, using AM and heard from 1234-1239. This is the experimental skywave compression station operated by the National Association of Broadcasters. (Hurley, MD)
- 1730.0 Monitoring several conversations via cordless phones at 1247. I've been picking up neighborhood cordless phones on this frequency for several months. (Hurley, MD) *We won't tell your neighbors, Bob.--The Chief.*
- 2680.5 DHJ59-Wilhelmshaven Naval Radio, Denmark, heard at 2000 with V CW marker G23B NAWs. (Ary Boender, Netherlands) *Welcome to the column, Ary. Nice to see a fellow from my homeland on board. Please report often. -- The Chief.*
- 2832.7 GNK-Norwick Radio, England heard with ARQ marker at 0115. (Boender, Netherlands)
- 3196.0 Prague Meteo, Czechoslovakia with weather RTTY messages at 2207. (Boender, Netherlands)
- 3319.0 MGJ-Royal Naval Radio Glasgow, Scotland, with V CW marker at 2212. (Boender, Netherlands)
- 3641.0 BMB-Taipei Meteo, Taiwan, heard at 1040 with conclusion of traffic and ID: DE BMB BMB. (Mike Hardester, Okinawa) *Hey, Mike, CW I assume. -- The Chief*
- 3700.0 Female (American accent) in AM sending three/two digit number groups at 1910. Parallel to 4700 and 5055. (Hurley, MD)
- 4450.0 New York CAP Wing Net with net control Empire 504 (Northeast 4 mobile) working Empire 10, Empire 749, etc. with information concerning a communications school that was held in Albany. Heard at 2230-2255 in USB. (Hurley, MD)
- 4560.0 YHF-Israeli Mossad station with group 21, 66 then five-letter groups at 0133. (Fernandez, MA)
- 4625.0 VEB-Israeli Mossad station with same "pips" as usual but now every 3-1/2 seconds (usually 2-1/2 seconds) at 0139. (Fernandez, MA) *This is definitely not a time station, it's an Israeli Mossad. -- The Chief.*
- 4882.5 Bulgarian female five-digit number station ending at 0349, followed by another (same?) five-digit number broadcast. (Fernandez, MA)
- 5065.0 Female in AM (American accent) number station sending three/two-digit groups at 2315. (Hurley, MD)
- 5417.0 Spanish female five-digit number station at 0207. (Fernandez, MA)
- 5591.0 In USB, two males with fishing boats ops in English in the Gulf of Mexico. Also a similar group on 5604.0, also in the Gulf area. On 5604, a female came on and asked the boats to shift frequency but they ignored her. She IDed as Rainbow Radio. Both nets inside the aero bands at 0153. (Fernandez, MA)
- 5713.0 Architect-RAF with altimeter reading for locations around England. (Fernandez, MA)
- 5860.0 Bulgarian female five-digit number station (repeated each group) followed by another (same?) text heard at 0403. (Fernandez, MA)
- 5950.0 B3B/M4W/RYS heard at various times covering the Voice of Free China at 0220. I am not a Ute listener and would appreciate you putting this in your column so I can find out who these stations are. I would like to write whoever and tell them their communications disturbed my listening. (Alvin Mahler) *Well, Alvin, you can start with the Department of the Navy, but before you write, take a hard look at your radio. I don't list this channel ever used by the Navy signal on that frequency. Good luck and if you ever get interested in Ute, drop by and see all of us again. -- The Chief.*
- 6218.6 KEL-Orange, Texas, USA, limited coastal working M/V Johnny Brown for ETA at 1930 in USB. WEC-Norfolk, Virginia, working M/V Linda Brandt talking about engine room problems at 2004 in USB. (Perdue,

- AL)
- 6343.5 UKA-Vladivostok Radio, USSR, at 1101 with CQ CW marker. (Dix, NY)
- 6512.6 LGN30-Rogaland Radio, Norway, heard in USB at 2305 with English weather broadcast. (Kiely, Ireland)
- 6515.7 WCM-Withamsville, Ohio, working M/V City of Huntington, et al for daily reports at 1914. (Perdue, AL)
- 6556.0 KLM 887 working Bombay with a SELCAL check (DLAM) and requesting a flight level of 37,000 feet at 2326 in USB. Also Colombo Aeradio working Madras Aeradio in USB at 2319. (Kiely, Ireland)
- 6643.0 KLM 838 working Bern Radio with a phone patch to a private number at 2112 in USB. (Kiely, Ireland)
- 6685.0 RFNV-Moscow Aeroflot Radio, USSR, heard at 1948 calling CQ in CW. (Boender, Netherlands)
- 6730.0 WAR46/Brow Beater with radio checks on primary/secondary frequencies. This frequency referred to as Xray 903. Other frequency was Papa 380. Then WAR46 had Line Pole do a radio check on Papa 380. (Fernandez, MA)
- 6735.0 "X" single letter HF beacon heard at 2056 in CW. (Boender, Netherlands)
- 6745.0 CIO2-Israeli Mossad number station at 2145 in USB. (Kiely, IR)
- 6825.0 RCC Vancouver, BC Canada with several phone patches at 0420. (Forstlund, CA)
- 7404.0 German female three/two-digit number station at 0009. (Dix, NY)
- 7604.0 KAA60-FCC Station in Grand Isle, NE, conducting radio checks with other monitoring stations. Using RTTY 425/45 could also be heard simultaneously on 10902. No bit inversion encryption was used at 0330. (Inman, TN)
- 7658.0 YZD-TANJUG News Service, Belgrade, Yugoslavia, with EE RTTY news bulletins at 2240. (Boender, Netherlands)
- 7680.0 English female with "6959, 2520" repeated while a male in Czech doing a long string of numbers and a single word at the end (0235), then off the air. Meanwhile female continues. At 0239 she stopped and the carrier off a minute later. At an earlier date, heard five-digit groups in English at the same time as Spanish groups. (Fernandez, MA)
- 7685.0 RBV75-Moscow Meteo, USSR, with RTTY weather messages at 2200. (Boender, Netherlands)
- 7760.0 RGH77-Arkhangelsk Meteo, USSR, with RTTY weather at 2125. (Boender, Netherlands)
- 7855.0 ROK24-Moscow Meteo, USSR, heard at 2125 with RTTY weather messages. (Boender, Netherlands)
- 7890.0 ROQ3-Novosibirsk Meteo, USSR, with RTTY weather at 2133. (Boender, Netherlands)
- 7953.0 RCC Vancouver, BC, Canada, heard conducting phone patches in USB at 0545. (Forstlund, CA)
- 8085.0 RVL21-Khabarovsk Meteo, USSR, with RTTY weather at 2130. (Boender, Netherlands)
- 8165.0 5YD-Nairobi Aeradio, Kenya, with RTTY RY test tape at 1950. (Kelly, Ireland)
- 8438.0 9WH-Kota Kinabalu Radio, Malaysia, with CQ CW marker at 1042. (Dix, NY)
- 8439.0 PBC38-Dutch Naval Radio, Goeree Island, Holland, heard at 2025 with RTTY RY test tape. (Kiely, Ireland)
- 8448.0 A9M-Bahrain Radio heard at 1858 with DE CW marker. (Boender, Netherlands) Heard same at 2030. (Kiely, Ireland)
- 8458.0 ROT-Soviet Naval Radio, Moscow, heard at 2230 with CQ CW marker. (Boender, Netherlands)
- 8471.0 UXN-Arkhangelsk Radio, USSR, with DE CW marker at 2042. (Boender, Netherlands)
- 8510.0 FFL4-St. Lys Radio, France, with CQ marker at 0127. Listed for FFS4 and also heard at 8522.5 (Hawkins, MS)
- 8550.0 TBA5-Turkish Naval Radio Ankara with CW V marker at 2244. (Boender, Netherlands)
- 8715.0 WCC-Chatham Radio, MA with SITOR-B plain text weather at 0503. (Hawkins, MS)
- 8858.0 Unid-Two drunk fishing boat captains jabbering in Cajun French and English mixed in the aero bands at 2230. (Perdue, AL) *I told those two hot heads not to use that frequency, that you would be listening. Welcome again Neal, and thanks for the nice words. -- The Chief.*
- 8903.0 Niamey Aeradio, Niger, working Speedbird 44 at 0054 in USB. (Dix, NY)
- 9023.0 Brewmaster and Darkstar Mike authenticating each other at 1347. Big Foot and Yeager (appears to be the NORAD control over the hot areas by CFB Cold Lake, northeast of Edmonton) conducting radio checks at 1354. Yeager Weapons (controls the 441st squadron of CF-18s out of

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- CFB Cold Lake-their call sign Rhinestone and a tail of HG #) to Dungere (AWACS) using a frequency of 336.6 primary and 324.0 secondary and refueled by Emit 83, also AIRP would be 309.4. They also used 230.4 as a data link channel to Yeager Weapons. The whole bunch also talked on 15.715 and 18.027. All comms in USB. (Brinkley, CA)
- 9025.0 Thunderstone (SAC ground station?) working Normandy with authentication request at 1302 in USB. (Kiely, Ireland)
- 9129.0 Two unid stations called this channel "Golf" in USB at 1335. (Brinkley, CA)
- 9130.0 Israeli Mossad station heard here with five-letter groups at 0203. (Fernandez, MA)
- 9140.0 English female five-digit number station at 0240. (Fernandez, MA)
- 9237.0 Spanish female five-digit number station at 0523. (Fernandez, MA)
- 9290.0 RTQ78-Sverdlovsk Meteo, USSR, with RTTY weather messages at 2140. (Boender, Netherlands)
- 10740.0 German female three/two-digit number station at 0114. (Dix, NY)
- 10880.0 SPAR66 aircraft flying from Keflavik to NAS Norfolk, Virginia, working Andrews AFB, Maryland, at 2140 in USB. (Kiely, Ireland)
- 10970.0 English female five-digit number station mixing with AFRTS 1 kHz down and occasional USAF OTHR-B burst. Text ended with just "00000" at 0510. (Fernandez, MA)
- 11108.0 English female (accent) repeating Papa November then at 0335 started three/two-digit number groups. (Dix, NY)
- 11176.0 SAM972 working Andrews AFB at 1956 in USB. Has the National Security Advisor on board. (Kiely, Ireland) *This one surprises me, Bill. This is a GCCS House channel and I would think they would avoid these channels, but it is the Navy, we do things wierd, hi, hi. -- The Chief.*
- 11215.0 German female three/two-digit number station at 0222. (Fernandez, MA)
- 11300.0 Mogadiscio Aeradio working Seychelles Aeradio about aircraft flight plans at 2012 in USB. (Kiely, Ireland)
- 11532.0 Spanish female five-digit number station at 0217. (Fernandez, MA)
- 12070.0 Several stations heard on this channel, identified channel as W-108. (Brinkley, CA)
- 12682.5 PKE-Amboina Radio, Indonesia, with CQ CW marker at 1114. (Dix, NY)
- 12690.0 NMN-USCG COMSTA Portsmouth, Virginia, USA, with NUKO traffic in CW at 1815. (Boender, Netherlands)
- 12833.0 RMP-Soviet Naval Radio, Kallningrad, heard at 1452 calling UXRL in CW. (Boender, Netherlands)
- 12950.0 Golf 3 Victor (a/c) and an unid ground station conducting a phone patch. Once patch initiated, all parties conversed in German at 0300 in USB. (Fernandez, MA)
- 13053.0 E32GB-Comsubmar with copy headed "Restringido" date, time and into encrypted RTTY 796/75R at 0035. (Bilodeau, IL)
- 13205.0 SPAR65 (US Navy VIP aircraft) calling Andrews AFB for 30 minutes with no answer at 1745 in USB. (Kiely, Ireland)
- 13214.0 MAC 76955 (C-141 Starlifter) working Croughton AB (GCCS) with phone patch to Command at 1130 in USB. (Kiely, Ireland)
- 13247.0 WGY-912 to Red Bat ready to send traffic then RTTY 1733 then Mess Hall radio check at 1749. (Brinkley, CA)
- 13342.0 Pakistan 714 calling Karachi Aeradic with no answer at 1706 in USB. (Kiely, Ireland)
- 13434.0 Spanish female five-digit number station heard at 0207 in AM. (Fernandez, MA)
- 13530.0 RVW53-Moscow Meteo, USSR, with RTTY weather at 1856. (Boender, Netherlands)
- 14315.0 Spanish female five-digit number station at 0450. (Forslund, CA)
- 14441.5 NNNOCMQ-USCG Alert working NNNOPPE (US Navy MARS phone patch speciality net coordinator) Norfolk, Virginia, with phone patch traffic at 1517 in USB. (Perdue, AL)
- 15715.0 Leg Boot, Retention, Deer Tag, Red Dog Ops (552nd, AWACS, Tinker AFB, OK) Ankle Bone talking about tracks at 1511 and Side Car to Brewmaster at 1825. (Brinkley, CA)
- 16075.0 Unid Russian cyrillic transmission headed with "Gorbachev on Russian FSR party conference." Also contained many references to the Kommunisti Partii, meetings, etc at 0415 with RTTY 475/100R. (Bilodeau, IL)
- 16959.0 ZB22-unid station with DE CW marker around 0100. (Dix, NY) *Anybody know who this is. -- The Chief.*
- 16980.0 UND-Novorossiysk Radio, USSR, calling 41S7 at 2002 in CW. (Dix, NY)
- 17014.5 Single letter HF "S" beacon heard at 2212. (Dix, NY) *Not all these dudes have disappeared. I have two of them reported this month. -- The Chief.*

- 17029.0 JMC-Tokyo Radio, Japan, with CW weather at 2149. (Dix, NY)
- 17037.0 YQI5-Constanta Radio, Romania, calling YQGP at 1730 in CW. (Boender, Netherlands)
- 17045.5 57YTR calling 590SB followed by RY INT ZBZ ZAI2 KKK in RTTY 839/100R at 1826. (Bilodeau, IL)
- 17090.0 Bequick 3 requesting a radio check with Bequick 1 with interference from XSG at 1850 in USB. (Dix, NY)
- 17170.0 MIW2-Israeli Mossad number station heard at 2017 parallel 12747. (Dix, NY)
- 17229.5 YUR-Rijeka Radio, Yugoslavia, with CW call sign only ID and ARQ idling at 1855. (Hawkins, MS)
- 18038.0 Numbers station - Female in English with a strange accent using five-number groups an repeated each group before the next group is sent heard at 1808. (Brinkley, CA)
- 19529.0 JMG5-Tokyo Meteo, Japan, with 850/50R RTTY coded weather at 1520. (Hawkins, MS)
- 19822.5 5AF-Tripoli Aeradio, Libya, with aero RTTY messages at 1115. (Boender, Netherlands)
- 19969.0 WGY986 working WGY906 would maintain this channel (F52) because the female operator had only one transmitter at 1908 in USB. (Brinkley, CA)
- 20150.0 SAM 206 (A/C) with phone patch to Guiltar via Andrews AFB. Later 206 talking to another SAM A/C and shifted to another frequency after patch comms completed in LSB at 2127. (Fernandez, MA)
- 20715.0 RFFXCC-French Navy with coded five-letter groups 334 total. Controle de Voie Message followed afterward at 1616. ARQ-E3. (Bilodeau, IL)
- 20812.0 RFTJD-French Navy Paris, France, with controle de voie test message at 1530 using ARQ-E3 826/48. (Bilodeau, IL)
- 20972.2 MKK-London (Stanbridge), England, with foxes test tape at 1520 using FDM 120/50N. (Bilodeau, IL)
- 22543.0 7TF-Skikda Radio, Algeria, with CQ CW marker at 1235. (Boender, Netherlands)
- 23370.0 Jeddah Meteo, Saudi Arabia, with RTTY weather messages at 1340. (Boender, Netherlands)
- 23561.0 PCW1-MFA, The Hague, Netherlands, heard at 1200 with ARQ messages. (Boender, Netherlands)
- 23642.0 KWS78-US Department of State Radio, Athens, Greece, with CW QRA marker at 0946. (Boender, Netherlands)

The Scanning Report

Bob Kay

c/o MT, P.O. Box 98
Brasstown, NC 28902

Scanning Basics

I was opening my mail the other day when I came across a letter positively brimming with frustration. "A ton of frequencies can't help me," bemoaned the reader, "if I don't know how to utilize my equipment." As I read that statement, I suddenly realized that many of you were new subscribers who were just beginning to explore the world of scanning. If you're nodding your head in agreement, then this column has been written especially for you -- the scanning novice.

Here are a few of the more common questions that have appeared in my mail bag.

➔ *"What scanner radio should I buy?"* This is a difficult question to answer. It's akin to asking, "What automobile should I buy?" If you're new to the hobby, don't spend more than \$200.00 dollars on a scanner radio. Forget about monitoring the military aircraft and cellular bands. Buy a basic scanner radio that can receive the VHF and UHF frequencies. Heck, there's plenty of action on the regular scanning bands. After your feet get wet, you can upgrade to a more professional and expensive model.

➔ *"Will I hear more signals on a desk top scanner radio?"* Absolutely not. The sensitivity of hand held scanner radios is identical to the larger, non portable models.

➔ *"If I erect an outside antenna, will my monitoring range increase?"* With an outside antenna, you can expect to receive radio signals that are within 35 to 50 miles away. But don't forget that buildings and ground terrain can adversely affect your reception.

➔ *"How do I determine the height of my outside antenna?"* Ideally, your antenna should be above the roof tops and or tree tops in your neighborhood. If that isn't possible, don't be afraid to experiment. Place your antenna in several locations, and spend an hour or so comparing notes. Afterwards, it's a simple matter of permanently installing the antenna at the most receptive location.

➔ *"Will I hear more signals if my outside scanning antenna is grounded?"* No. Your antenna should be grounded for safety reasons. But don't expect an improvement in reception.

➔ *"Is there a 'super antenna', that can extend my scanning range?"* The signals that we receive on our scanner radios rarely travel over 60 miles. Don't be fooled into believing that a particular make or model will extend your scanning distance to hundreds of miles.

➔ *"What type of coax cable should I use?"* Visit your local Radio Shack store and buy RG-6 coax cable. If you don't want to install the end connectors, the cable can be purchased with factory installed "F connectors." For maximum signal transfer between the antenna and scanner radio, keep the lead-in as short as possible. Generally, any length under 50 feet is acceptable.

➔ *"Can I use a television preamplifier on my scanner radio?"* Sure, but be careful to check the manufacturers frequency limits. Most TV preamps fall between 80 and 500 megahertz. If you're trying to boost your scanning reception on 800 megahertz, the selected preamp must be rated for the higher frequencies.

➔ *"My local police can 'scramble' their transmissions. Is there a way for me to listen in?"* The Electronic Communications Privacy Act of 1986 made it illegal to monitor scrambled voice transmissions. Prior to the ECPA, there were a few commercially produced



Bob Kay answers questions at the Knoxville Convention

descramblers that retailed for under fifty dollars.

➔ *"Can I be arrested for monitoring cellular car phones?"* You probably stand a better chance of being struck by lightning. In any large city, millions of cellular conversations are being broadcast across the air. Anyone with a scanner radio can listen in. If you walked into a police station with your scanner radio tuned to cellular phone conversations, the cops would probably join in and listen to the activity.

➔ *"Is it illegal to have a scanner radio in my car?"* In some states mobile scanning is illegal. Before installing a mobile rig, check with your local or state police.

➔ *"I'm disabled and in a wheel chair. Can you suggest an agency that will erect a roof top scanning antenna?"* Your local television repair shop is an ideal place to start looking. Other repair shops can be found in the yellow pages of your phone book.

➔ *"What is the formula for making a custom antenna?"* To construct a half wave dipole, divide the frequency by 468. The answer provides the length of the antenna. Here's an example: To monitor the cordless phone bands, let's choose 46.6 as our frequency. To determine the length of our antenna, simply divide 46.6 into 468. As you can see, your cordless antenna would be approximately ten feet long.

➔ *"When I enter the frequency of 162.4375 into my scanner, it automatically displays 162.435. Is something wrong with my radio?"* Your scanner radio is working just fine. The 5 kHz resolution of most scanner radios will round off the entered frequency. Since the FM signal is quite broad, it won't compromise your ability to hear all the action.

➔ *"How can I reduce the 'hiss' on my scanner when monitoring the 800 megahertz band?"* The "hiss" is receiver noise that is internally generated by the components of your scanner radio. Strong signals usually eliminate the problem, but weak signals cannot. The only cure is to improve your antenna system or move closer to the transmitter site.

For best results, use low loss RG-6 coax and keep your lead-in as short as possible. If your coax is 100 feet or more, an outdoor, mast-mounted preamplifier is recommended.

➔ *"Is there a scanning book that explains the basics of the hobby?"*

Yes indeed -- Contact DX Radio Supply, and ask for Bob Kay's *Citizen's Guide to Scanning*. The book retails for \$12.95 plus \$1.20 shipping. Here's the address: P.O. Box 360, Wagontown, PA 19376.

800 Band Allocations

Last month we talked about the world "beyond cellular" and made reference to an official frequency allocation chart which did not accompany the article. We're sorry; the dog chewed it up. But we've reconstructed the pieces, and it appears below.

Treasure Hunt

Sure, I know that you're excited. I also know that many of you have a problem. You want to monitor the new world of 800 megahertz, but you don't want to spend several hundred dollars on a new scanner radio. Relax. I've got the perfect solution.

The folks at "GRE America," are marketing two scanning converters that will allow you to explore the entire world of 800 megahertz. The "Super Converter I," converts the standard UHF band to receive all of the action between 806 and 960 megahertz -- including cellular!

The Super Converter I is approximately 3"x5"x2". The unit is equipped with a short length of coax, and a factory installed motorola plug. To convert the standard UHF band to 800 megahertz, you simply connect the Super Converter to your scanner radio, and then search between 450 and 512 megahertz.

The Super Converter II is not a bulky piece of equipment that must be disconnected when not in use. The unit is only a few inches long, and it attaches directly to the BNC connector on your scanner radio. When standard scanning of the UHF band is desired, there's a switch on the back that allows instant return to normal scanning.

800 MHz Band Allocation Chart

806-810	Business conventional systems mobile
810-816	Public Safety slow growth system mobiles
816-821	Business SMR trunked system mobile
821-824	Public Safety mobile
824-835	Cellular Mobile Telephone nonwireline mobile
835-845	Cellular Mobile Telephone wireline (Bell) mobile
845-846.5	Cellular Mobile Telephone nonwireline mobile
846.5 - 849	Cellular Mobile Telephone wireline (Bell) mobile
849-851	Land Mobile Satellite (reserved) mobile
851-855	Business conventional system base
855-861	Public safety slow growth systems base
861-866	Business trunked systems base
866-869	Public safety base
869-880	Cellular mobile telephone nonwireline base
880-890	Cellular mobile telephone wireline (Bell) base
890-891.5	Cellular mobile telephone nonwireline base
891.5-894	Cellular mobile telephone wireline (Bell) base
894-896	Land mobile satellite (reserved) base
896-898.5	Business SMR
898.5-899.75	Industrial Land transportation
899.75-901	Business
901-902	General purpose mobile radio
902-928	Amateur radio (Ham)
928-928.35	Domestic public private multi-address
928.35-928.85	Domestic public reserved
928.85-929	Domestic public wide area paging
929-929.75	Domestic public reserved
929.75-930	Domestic public voice paging
930-931	Domestic public digital paging
931-932	Domestic public common carrier paging
932-935	Government private shared operational fixed
935-937.5	Business SMR
937.5-938.75	Industrial Land transportation
938.75-940	Business
940-941	General purpose mobile radio
941-944	Government private shared operational fixed
944-947	Broadcast studio-transmitter link (aural)
947-952	Broadcast auxiliary
952.1-952.7	Private microwave omnidirectional control
952.8-956.1	Private microwave operational fixed
956.25-956.45	Private fixed signaling and control
956.5-959.8	Private microwave operational fixed
959.85-960	Common carrier wide area paging

Power is supplied by an internal 9 volt battery, and there are no external wires or technical adjustments. The Super Converter II is a straightforward, compact unit that really works.

When I asked GRE to provide their Super Converters for our Treasure Hunt, they sent two of each unit. In addition to providing four converters, GRE also sent along two "Super Amplifiers." The Super Amplifier is a preamp that has been designed to improve reception on the VHF/UHF bands from 100 MHz to 1 Gigahertz.

The Super Amplifier has an adjustable gain that allows for 20dB of amplification. In appearance, the Super Amplifier is nearly identical to the Super Converter II. Both units are contained in professional quality aluminum boxes that have an attractive black metal finish.

The Super Amplifier connects directly to the BNC connector on your scanner radio. Power is supplied by an internal 9 volt battery and the unit incorporates "state-of-the-art" circuitry. Best of all, I tested the Super Amplifier and the Super Converters. All the units performed admirably and without exhibiting any major flaws.

If you're keeping count, we now have six prizes for the November/December Treasure Hunt. But wait, there's more! GRE has also provided two rubber ducky antennas. These antennas feature extended range and they can be the ideal companion for hand carried scanner radios.

Okay, we now have eight prizes. I'm going to include one rubber ducky antenna with each Super Amplifier II. To keep things simple, we will pick six winners. Two people will win one Super Amplifier with a rubber ducky antenna. Two people will win one Super Converter, and two people will win one Super Converter II. To become a lucky winner, you'll need to find the answers to the following clues:

1. What is the 800 telephone number for GRE America, Inc.?
2. An attenuator reduces the strength of the signal. True or False?
3. "On the second day of Christmas, my true love gave to me -- ." Name the items that were received.
4. What is the main UHF backup frequency for the Space Shuttle?
5. Provide the handset frequency for cordless phone channel #2.

Send your answers to the "Treasure Hunt," P.O. Box 98, Brasstown, N.C. 28902. Beginning with this month, there are several new rules that should be noted:

- 1) Please use post cards whenever possible.
- 2) No FAXed entries.
- 3) Multiple entries are okay, but each entry must be mailed separately.

IF YOU RECOGNIZE THIS ANTENNA SET UP IN YOUR TOWN YOU CAN BE ASSURED THAT YOUR AREA IS BEING SERVICED BY A CELLULAR MOBILE TELEPHONE (CMT) COMPANY. SHOWN IS A TYPICAL CELLULAR ANTENNA CONFIGURATION.

Sammy the Scanner

NORTHEAST SCANNING NEWS:
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LOU CAMPANA

The Scanning Report

The Super Converter II and the Super Amplifier can be purchased from Grove Enterprises. Check Grove's catalog for the current prices or call 704-837-9200.

Frequency Exchange

During this time of year, most people that live in the snow belt are wishing for a white Christmas. With that in mind, let's visit a place where there's been snow on the ground since late September.

Ken Webster lives in Newfoundland and he has provided the following frequencies:

165.2375	US Customs
155.01	Lake Placid Police, NY
155.37	"
156.21	"
158.91	"
154.10	Montreal Police, North
155.40	Montreal Police, South
167.01	Quebec Police
166.62	"

Since everyone is chilled to the bone, let's warm up with a visit to the "Richard Nixon Library" in California. Norm Anderson lives nearby, and he has provided us with a few of his favorite frequencies: 163.96, 163.91, 163.885 and 167.025.

Norm claims that the above frequencies become very active when dignitaries make a scheduled stop at the library. Thanks Norm. I'd like to stay longer, but the Democrats and Republicans in the group are beginning to growl at one another.

To get everyone into a festive mood, our next stop will be the state of Kansas. Dorothy, Toto and the Wicked Witch have invited us to Munchkin land -- just kidding, just kidding.

Since we are in Kansas, I suppose that it wouldn't hurt to check out the frequencies that were sent in by Jeff Henjes.

39.78	Fish & Game
41.50	Fort Riley Tower
148.15	Civil Air Patrol (repeater out)
151.10	Turnpike maintenance
151.085	Turnpike toll booths
158.73	Johnson County Sheriff
154.83	Turnpike Authority
155.85	Kansas City Police, tactical
159.03	Johnson County Sheriff
159.105	Johnson County Sheriff
159.21	Kansas City Police, tactical
452.35	Highway Patrol
453.45	Highway Patrol

Our next invitation is from the state of Oklahoma. Bob Pettengill lives near Oklahoma City, and he has prepared an interesting list of his favorite frequencies:

45.22	Highway Patrol
131.925	Federal Express
149.525	Will Rogers fire and crash crew
151.055	Storm Spotters, Oklahoma City
154.10	Mustang City Water
154.785	Highway Patrol
155.130	Grady County Sheriff
155.160	Oklahoma Rescue teams
155.205	Baptist Medical Center
155.280	Presbyterian Hospital
155.385	Yukon EMS/Norman/Lindsay
155.565	Yukon Police
158.775	Airport surveillance
158.925	Marriott Hotel security
160.325	Burlington Railroad
164.9625	Tinker Medical Net
165.635	FAA Security

165.6625	Tinker, Fire & Crash Crews
166.00	IRS
170.065	Federal Prison
173.10	Storm Spotters, Norman, Oklahoma
451.125	Electric Company
453.775	Midwest City Hospital Net

Ready for a Helicopter ride? Let's visit Parkview Memorial Hospital, in Fort Wayne, Indiana. As we board the *Samaritan*, you'll immediately notice that the interior resembles a hospital emergency room. The helicopter can carry two patients, two medical specialists, an FAA trained flight mechanic, a registered nurse and a flight paramedic. Here are the frequencies:

122.800	Fuel station located at Smith Field
155.205	Hospital Dispatch frequency
155.280	Indiana Hospital Emergency Net
155.340	"
462.950	Ground EMS dispatch
463.175	Parkview Memorial Hospital

If you want to go airborne, there's a problem. The liftoff fee for the *Samaritan* is \$1,450.00 dollars. Cost per mile is \$30.00 dollars. Anyone bring along their check book?

Flying enthusiasts that couldn't afford the *Samaritan* will love our next stop. Welcome to "Baer Field," Fort Wayne, Indiana. As some of you already know, Baer Field is home to the 122 Tactical Fighter Wing of the Air National Guard.

148.175	Fire & Crash
148.300	Commanders Net
148.400	Training
148.550	Security
149.275	Operations
257.800	Tower
348.600	Ground
369.200	Approach
398.200	Approach

Okay, gang, that's it for the Frequency Exchange. If anyone needs a lift home, the National Guard will fly you back and *Monitoring Times* will pick up the tab. Enjoy. (The *Samaritan* and Baer Field frequencies were submitted anonymously.)

To invite the Frequency Exchange to your neck of the woods, simply send in your favorite frequency list to the "Frequency Exchange," P.O. Box 98, Brasstown, NC 28902.

Cordless Taxation

Under new guidelines for its criminal investigators, the IRS can monitor your cordless phone conversations. As most of you know, a recent Supreme Court decision ruled that cordless phones are not protected by federal privacy laws.

The IRS says that since cordless phones are not protected, its agents can listen in at any time, and without a court order. If you're thinking about discussing your tax return with someone, don't do it on a cordless phone.

Cellular Hanky Panky

The Canadian Attorney General was forced to resign when his taped cellular phone calls were made public. According to a newspaper article, the Attorney General used his cellular car phone to arrange dates with his mistress and to verbally slander his fellow colleagues. I'll wager \$5.00 bucks that the Attorney General never subscribed to *Monitoring Times*. Anyone care to bet?

Next Month

Forget about "Peace on Earth and Good Will toward Men." In December's column, you'll experience Christmas in the big city. It's an action filled scanning adventure that you won't want to miss.



Realistic® Presents the Next Big Step in Scanners



HYPERSCAN™

Now, You Can Scan Up to 400 Channels Fast—in Less Than 16 Seconds

You'll be "on the scene" of local action in a flash with the Realistic PRO-2006. More than 196,000 exciting frequencies are at your command, including the new 800-MHz police and emergency bands. At up to 26 channels per second, you'll scan much faster than most scanners not equipped with HyperScan.

You get ten 40-channel memory banks, a 10-channel monitor bank, search mode and selectable priority function. Frequency coverage is 25-520, 760-823, 851-868 and 896-1300 MHz. Precise ZeroMatic® tuning locks on-frequency for best reception. A backlit LCD display, memory backup and full array of jacks are included.

Take the next big step in communications excitement—check out the Realistic PRO-2006, available at Radio Shack.

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RELIABLE QUALITY—Over 1500 engineers and technicians develop, evaluate and test to our exacting standards—*NOBODY COMPARES*
PROMPT SERVICE—Over 7000 drop-off points nationwide insure dependable service to your satisfaction. Over 1,000,000 parts stocked. We service what we sell—*NOBODY COMPARES*

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what's new?

New JRC Radio(s)

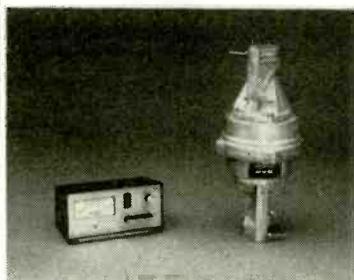
Japan Radio Co., Ltd. has announced the release of a high performance version of their JST-135 HF (high frequency) transceiver. JST-135HP can receive and transmit anywhere from 100 kHz to 30 MHz (although transmission is possible only on authorized ham bands) in upper sideband, lower sideband, AM, CW, AFSK and FM modes.

Among the unit's many features are 200 memory channels and razor sharp selectivity (6 kHz ceramic, 2 kHz mechanical, and 1 kHz crystal).

For more information on the JST-135HP, contact your favorite radio store or write Japan Radio Company, Ltd., 430 Park Avenue (2nd Floor), New York, New York 10022.



Meanwhile, rumor has it that work is underway at Japan Radio Company, Ltd. on the replacement for the widely acclaimed NRD-525 general coverage receiver. According to an unofficial source, the NRD-535 should be released sometime in 1992. No further details are available at this time.



Heavy Duty Antenna Rotator

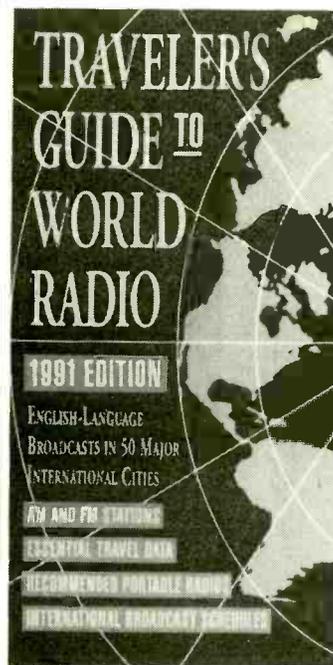
If you've been thinking of putting up a big antenna -- and we're talking *big* here -- you may want to consider Philips ECG's HD-73 Heavy Duty Antenna Rotator.

The HD-73 rotator is constructed of thick, aluminum castings on the outside with hardened steel gears for strength and resistance to wind and severe weather.

Just how tough is this baby? The HD-73 is designed to be able to swing 1,000

pounds of antenna at one revolution per minute.

The suggested retail price for the HD-73 is \$263.00. It's available at your favorite radio store or call Philips at 1-800-526-9354 for the dealer nearest you.



The Traveler's Guide to World Radio

Dubbed "the hot line to the world's English language broadcasts," the *Traveler's Guide to World Radio* is especially designed for the information-hungry business or recreational traveler.

Published by the same people who bring you the *World Radio TV Handbook*, this new entry into the radio book arena is arranged by city, showing local AM and FM broadcasts in English, schedules and frequencies of major shortwave broadcasters such as the BBC and Voice of America and other detailed schedule information -- all shown in "at a glance" (sound familiar?), easy-to-read charts. Other information shows local language, electric current, and telephone country prefix.

The 128 page *Traveler's Guide to World Radio* is available from DX Radio Supply, Box 360, Wagontown, PA 19376, for 9.95 plus 1.20 book rate or 2.30 UPS shipping.

Two-Watt Portable Radios

Midland has introduced a pair of 2-watt handheld radios. These rugged two-way units are programmable for two frequencies. Model 70-135 (VHF) operates in the 136-174 MHz range, model 70-235 (UHF) can be programmed to transmit and receive anywhere from 406 to 512 MHz. Both are small (6.9" x 2.7" x 1.8") and weigh about 21 ounces with the 600 mA/H battery pack.

The radios feature pre-set automatic noise squelch plus optional CTCSS (tone-coded squelch) and keypad DTMF (telephone-type) signaling.

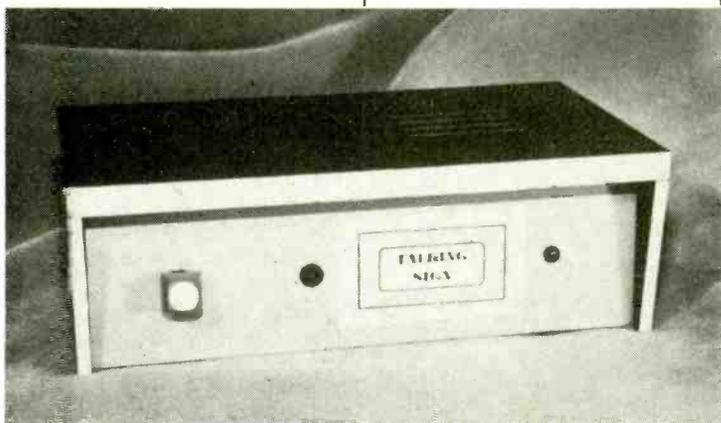
The 70-135 retails for \$339.95 and the 70-235 goes for \$389.95. Both are available from your favorite radio store or contact Midland Land Mobile Radio at 1-800-643-5263, ext. 1690.



(Legal) FM Transmitter!

Just about every radio enthusiast harbors a secret desire to own his own radio station. Unfortunately, few of us can afford the real thing. So we turn to smaller version of the 100 kW station in town.

M.B.R. Distributing, headed by *Monitoring Times* reader Mike Reiss, is now



stocking legal, low-power FM radio transmitters. The station, known as the FM-3, is a complete, solid state radio station.

The FM-3 uses standard house current, and has a chip that allows you to program a message of up to 64 seconds that is repeatedly broadcast on the FM band.

Of course, the FM-3 has a number of commercial applications and can be used to sell real estate ("Tune to 94.1 FM for details on this house"), accompany billboard advertisements, and so forth for a range of between 200 and 300 ft. And while you probably won't have to worry about getting a lot of reception reports for your station, it should be fun in most neighborhoods. Heck, in an urban environment, you could reach tens of thousands!

The FM-3 measures 10" x 3" x 6" and is covered by what the seller calls a "normal electronics defects guarantee of 1 year, parts and labor."

The FM-3 is \$495.00 (which includes shipping) from M.B.R. Distributing, P.O. Box 155, Ramsey, IL 62080.

Cyrillic Hard Copy for RTTY

A new computer program by Stewart Todd Morgan, KM4IC, will be of interest to the small but dedicated number of people who monitor Soviet maritime

RTTY traffic. Morgan's programs, which are available for use with the Universal M-7000, AEA PK-232, and Kantronic KAM, provide the Soviet maritime monitor with cyrillic hard copy of the transmissions that are monitored.

A description of the program is beyond the scope of a normal review; instead we encourage interested readers to send a self address, stamped business size envelope to Mr. Morgan at P.O. Box 37595, Raleigh, North Carolina 27627-7595. Please specify the type of decoder that you use.

New DAT Tape

Panasonic has begun marketing four different lengths of digital audio tapes (DAT). The new tapes, which are smaller than



standard audio cassettes, will be offered in 46-, 60-, 90- and 120-minute lengths.

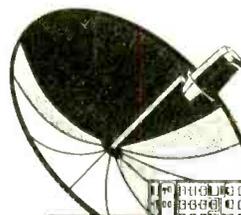
"Dealer and consumer reaction to DAT has been phenomenal," says George Dzan, assistant general manager of Panasonic's Magnetic Media Division.

Unlike the CD, Digital Audio Tape is a recordable format with the audio signal

being recorded magnetically on a 3.81mm-wide tape (the same width as normal audio tape) and played back by a fast-spinning magnetic head, similar to, but smaller than, that of a VCR.

Panasonic DAT tapes will range from \$10.99 for the 46 minute version to \$16.99 for the 120 minute length.

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New ICOM IC-R7000 Computer Controller



The Deltacomm Version 1.04 is a communications manager for the ICOM IC-R7000 communications receiver. Unlike similar products that merely control the receiver,

says its manufacturer, Delta Research, Deltacomm does not just control the radio but will "maximize the potential" of the R-7000.

The program includes a custom MS-DOS interface for control plus a comprehensive set of software communications tools that offer an individual "real world" software to analyze, log and generate reports from the data.

You can get your copy of Deltacomm 1.04, which includes external interface and components for cabling, for \$299.99 plus \$4.00 shipping and handling. For more information write Delta Research at Box 13677, Wauwatosa, WI 53213 or call 414-353-4567.



Fire Service Comms

Although intended for dispatchers, technicians and others involved in firefighting radio communications, *Fire Service Radio Communications* by Edwin Spahn serves well as an informative text for all forms of public service and even private sector radio communications.

Logically divided into seven basic themes, involving 35 chapters, Spahn's professional volume takes the reader from an FCC license application through the concepts of radio installation and maintenance and on into communications theory and equipment construction and design.

From preparing fiscal management responsibilities

to wiring and cabling the system to planning and erecting an antenna tower, this comprehensive work examines every imaginable cranny of radio system conception and realization.

Chapters include consultant services, specifying needs, repair shop considerations, installation requirements, signal propagation, characteristics of the radio spectrum, types of modulation, electronic components and laws, lightning protection, paging systems, batteries and power supplies, even various signaling methods.

Appendices cover electronic symbols, communications center standards, flow-charting principles, coax cable specifications and related documents and publications.

Whether you are a law enforcement officer, serious scanner enthusiast, dispatcher, technician or student of radio communications systems, this is the definitive book on planning VHF through microwave communications.

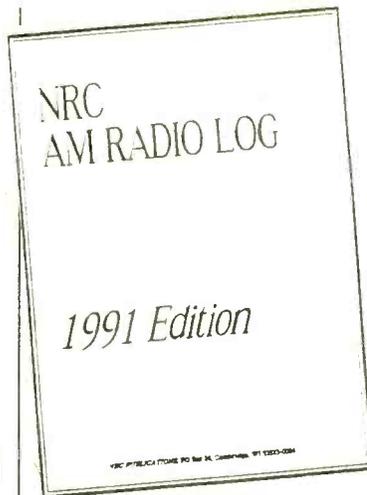
The 437-page *Fire Service Radio Communications* can be purchased on 30 day free trial from Pennwell Books, P.O. Box 21308, Tulsa, OK 74101, for \$42.95 plus \$2 handling.

NRC AM Radio Log

The new 1991 edition of the *NRC AM Radio Log* is now available. If you're one of the growing number of people who enjoy spinning through the AM dial in search of DX, this is a must-have.

Containing nearly 350 pages, the 8-1/2 x 11" loose leaf format book contains over 6,000 listings of AM stations from the United States and Canada. Included with each listing is the station's frequency, location, call letters, format news network, address, slogan, day and night transmitter power and more.

The new *NRC AM Radio*



Log is considered one of the more up-to-date references and one of the only sources prepared especially for DXers. It's available from DX Radio Supply for \$17.95 plus 2.00 book rate or \$3.05 UPS shipping from DX Radio Supply, Box 360, Wagontown, PA 19376.

New Kenwood Service Center

International Radio and Computers, a Florida-based firm, is now an authorized Kenwood repair service agency. Their address is 751 South Macedo Blvd., Port St. Lucie, Florida 34983 or call 407-879-6868.

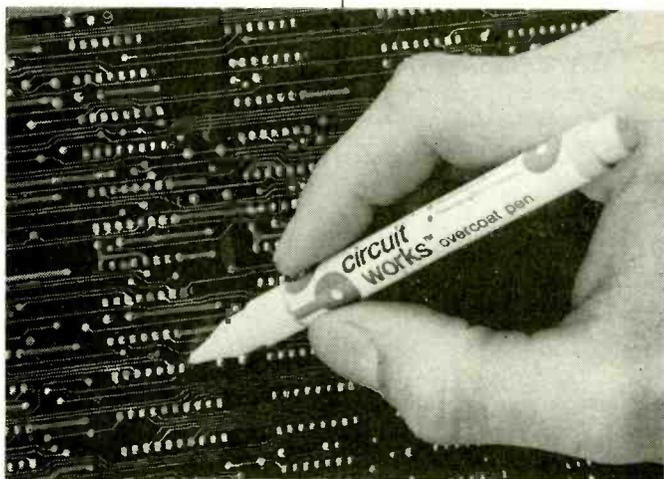
Circuit Works Pen

Project builders and electronic tinkerers may find Planned Products' 3300 Circuit Works Overcoat Pen to be a helpful addition to the bench. Designed to insulate, protect and repair circuits boards, components and delicate electronics, the 3300 applies a conformal overcoat to insulate against shorting, arcing and static discharge while protecting against moisture, abrasion, chemicals and other environmental hazards. Amazing.

Normal writing pressure opens the tip and the overcoat flows easily. Each pen is filled with enough fluid to protect approximately 60 feet of exposed traces.

To get your 3300 Circuit Works Overcoat Pen, send \$9.95 plus \$1.00 mail or \$2.50 UPS shipping to Planned Products, 303 Potrero, Suite 53, Santa Cruz, CA 95060 or call 408-459-8088.

This column is dedicated to new products, books, and gadgets of interest to the radio hobbyist. Send new product announcements or catalog clippings to: Editor, Monitoring Times, P.O. Box 98, Brasstown, NC 28902. (Be sure to include full information on where to obtain the item and its price, if possible.)



Review: Microdec MD-100 Code/RTTY Reader

In the early 1980s several amateur accessory manufacturers including Kantronics and AEA manufactured small, inexpensive devices which could be plugged into the external speaker jacks of receivers to directly view Morse and radioteletype messages.

These add-ons gradually disappeared as home computers took over. This left only two options: purchase a computer and the interface and software to view digital communications, or purchase a stand-alone demodulator like the InfoTech, HAL or Dovetron.

Now Somerset Electronics (1290 Highway A1A, Satellite Beach, FL 32937; phone 1-407-773-8097), has released a professional, inexpensive reader for the shortwave listener who would like to casually monitor RTTY and CW off the air with his receiver.

This featherweight (less than one pound) accessory measures approximately five inches wide and deep, and only a little over an inch high, fitting easily anywhere near—or on—the receiver. Power is derived from an AC wall adaptor (included); an internal, rechargeable nicad battery for portable operation is available.

The display is a bright, green, eight-character, 5 x 7 dot matrix LED array. As the message is received, it scrolls from right to left "Times Square" style.

The brightness of the display may be controlled by a pair of up/down pushbuttons; any of seven levels of intensity may be selected to accommodate various ambient lighting conditions.

An internal speaker is very handy for monitoring the digital signal while it is being tuned in for copy; a volume control may be adjusted to suit the user. An LED tuning light indicates when the signal level is adequate and properly tuned in to match the audio filter (1000 Hz CW, 2125 Hz RTTY and ASCII).



Modes

The Microdec MD-100 is capable of receiving Morse code (up to 70 WPM), radioteletype (60, 67, 75 and 100 WPM; 170 or 850 Hz shift) and ASCII (110 and 300 baud). Functions are provided by a Motorola 68HC705C8 microprocessor; an 8K EEPROM supplies the memory.

When the instrument is first switched on, it cycles through a self-test program on the main display; a READY readout tells the operator that he may select the appropriate mode. This is done by holding down the mode pushbutton which steps through its functions.

Computer Aided Scanning

a new dimension in communications from Datametrics



Now you can enhance your ICOM communications receiver through a powerful computer controlled system by Datametrics, the leader in Computer Aided Scanning. The system is as significant as the digital scanner was five years ago and is changing the way people think about radio communications.

- The Datametrics Communications Manager provides computer control over the ICOM R7000 or R71A receiver.

- Comprehensive manual includes step by step instructions, screen displays, and reference information.

- Powerful menu driven software includes full monitoring display, digital spectrum analyzer and system editor.

- Extends ICOM capabilities including autolog recording facilities, 1000 channel capacity per file, and much more.

- Innovative hardware design requires no internal connections.

- Overcomes ICOM limitations such as ineffective scan delay.

Datametrics, Inc

— R7000 system \$ 349
— R71A system \$ 349
— Manual and demo disk \$15

Requires ICOM receiver and IBM PC with 512K and serial port. The R71A version also requires an ICOM UX-14.

Send check or money order to Datametrics, Inc., 2575 South Bayshore Dr., Suite 8A, Coconut Grove, FL 33133. 30 day return privileges apply.

Code practice

If you'd like to get your code speed up to snuff, simply plug a key into the rear-panel jack. A pleasant tone, adjustable to comfortable listening volume, comes from the internal speaker as your message appears on the display.

A computer interface

If you would like to feed the decoded message into a computer, simply connect your PC to the DB-9 connector on the rear of the MD-100.

General impressions

The MD-100 is, in a word, cute. And it works well. The display is unusually sharp, and straightforward engineering invites immediate use without consulting the manual. The unit couldn't be simpler to operate.

With the appropriate mode selected by the pushbutton and the receiver tuned to the correct audio level and frequency, messages begin scrolling across the display within a few seconds as the microprocessor locks in on the bit rate.

Of course, with only eight characters visible, the operator will have to keep a sharp eye on the display to get the message -- no referring back to earlier copy! With words like "if," "and," and "the," it's no problem, but antisestablishmentarianism could take some concentration!

The MD-100 manual is very well written, easy to read filled with helpful hints for successful decoding.

All in all, the MD-100 is an impressive little box -- professionally engineered and designed, and worth its asking price.

The Microdec MD-100 decoder is \$199 plus \$8.50 shipping from Somerset Electronics, 1290 Highway A1A, Suite 206, Satellite Beach, FL 32937; phone 407-773-8097.

Safety First and Foremost

It has taken me most of my life to figure it out, but I have finally come to the conclusion that I am an "Adrenalin Junkie." I'm one of those folks who is always looking for the next thrill. Psychologists have long referred to "The Risk Taker Personality." They could put my picture next to the definition by way of an example.

So, between trips to the word processor, I have been found racing motorcycles, surfing, shooting rapids, doing all manner of wilderness adventures (still waiting for my wallet to grow so I can take up stunt piloting).

This is Monitoring Times, not Outward Bound, Uncle Skip!!

Aw, there you go again, looking for my point, huh?

The point is, I have developed a healthy respect for safety over the years of chasing adventure and excitement. Fact is, you can do almost any wild and crazy thing in this world with little fear of severe retribution if you simply pay attention to safety.

Now playing radio isn't quite as complicated as rappelling down the side of a mountain. However, do not let the sedentary nature of our pursuit of DX dull your senses to the potential dangers associated with our hobby. At the risk of being identified as a Nervous Nelly, allow me to point out a few cogent points through a little treatise I call

THE BEGINNER'S GUIDE TO SAFETY

Robert A. Heinlein once said that the only crime is ignorance and the only sentence is death. Pretty strong stuff, but relatively true. Our hobby can place us in pretty close proximity to electricity. Lack of knowledge in this area can surely kill. This and other dangers lurk in the corners of the radio hobby. But you can relax, old son, because knowledge is power and you are about to get a good strong dose of information.

Electricity

We tend to take that stuff that comes out of the wall sockets for granted. But it doesn't take a whole lot of electricity to kill someone. Over the years, building and electrical codes have changed and improved the state of the juice coming into our house so that the system itself can't harm us so long as we treat it with respect.

Never override existing safety devices

On the most basic level, let's assume your receiver came with a three-prong grounded plug. The purpose of the third prong is to allow a direct electrical short in your equipment to route itself safely to the ground.

Now if you have removed the third prong of the plug or if you have used an adaptor to allow you to plug your gear into an old-fashioned two-pronged socket, you have set yourself up for failure or worse. In this case, if a short occurs, the radio lacks a path to ground.

So what happens? You reach for the controls to tune Radio Freedomia in better and you become the path to ground. The stray voltage takes a shortcut through your body. If the path to ground just happens to cross your heart, well, it was nice knowing you.

Keep your hands where they belong

Most consumer electronics devices have a little rap printed on the back that goes something like this:

"TO PREVENT FIRE OR SHOCK HAZARD, DO NOT REMOVE THIS CABINET COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL."

The reason they put this on equipment is that it is really easy to get yourself zapped inside appliances. And guess what? They don't even have to be turned on to hurt you. This is possible because of a very common electronic component called the capacitor.

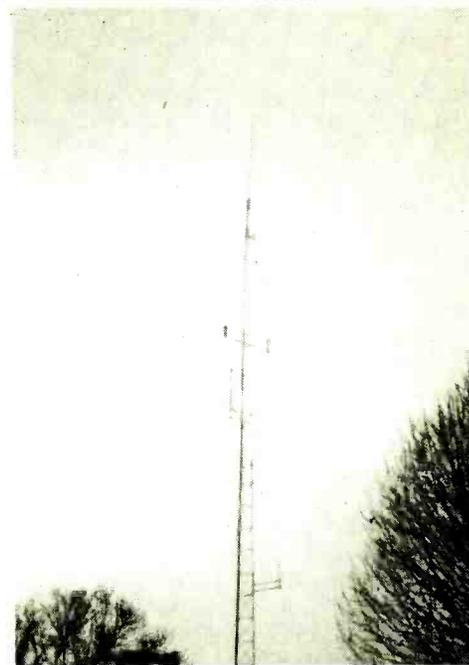
Capacitors store electrical charges, often well in excess of the 110 volts you find at your wall outlets. Capacitors can hold their charge even when equipment is turned off. As a matter of fact they can hold their charge indefinitely, until something comes along to discharge them.

If you have lifted the lid on your receiver and you poke your finger across a capacitor that has not discharged, once again you become that quick path to ground, only this time you may be dealing with 1500 volts. This would definitely lead to some slow walking and sad singing by the relatives of the deceased.

Treat all equipment and circuits as if they are energized at all times and please, please, please, if you have no training in electronics, take your gear to someone who does before you try to fiddle with it.

If a fuse blows, find the reason

I have never ever run across a fuse or



You would not want to climb a tower like this without proper safety equipment.

circuit breaker that died of old age. If your receiver's fuse goes or you trip your house's circuit breaker, make a thorough investigation into the possible cause before proceeding to replace the fuse or reset the breaker.

Most causes are fairly obvious. I am sure we have all tripped a circuit breaker a few times by having too many things all running at once. The solution is simple. You can't listen to BBC while you are making toast, running the can opener, with dinner on the stove and the air conditioner going.

But some fuse and breaker failures are a little less obvious. If you cannot come to a logical conclusion, seek the help of someone with a stronger background in electronics. The reason for this is one of the causes of fuse and breaker tripping is our old friend, the short. Replacing the fuse or resetting the breaker against a short will just set you up for wings and a harp. Of course, never, never, never try to solve your problem by installing a larger fuse than indicated by the manufacturer.

Stay dry

Most folks will think I am stating the obvious here but every year dozens of people mix electricity and water with fatal results. A good radio hobbyist example would be someone who was listening to Radio Freedomia with their receiver perched next to the sink where they were doing dishes. The receiver falls in the water and our radio buddy takes up the occupation of pushing up daisies.

Likewise, handheld moisture can get you in real trouble. For many folks in radio land,

Coast Guard Radio
A Guide to Using and Monitoring US Coast Guard Communications
 by James T. Pogue.

Full listings of all US Coast Guard vessels, aircraft and installations. Frequencies, call signs, addresses, weather and Notice to Mariners broadcasts, Loran, history, organization, much more.
 \$12.95 + \$2 s/h (\$3 foreign)

The Warship Directory
Vol 1 - US, Canada, Great Britain.
 US Navy, Military & Sealift Command, Coast Guard, Army, NOAA, research vessels, Canadian Navy & British Navy. Plus radio call signs and frequencies.
 \$12.95 + \$2 s/h (\$3 foreign)

The Scanner Listener's Handbook
How to Hear More on Your Scanner Radio
 Explore 25 - 2000 MHz. Band allocations, users, scanners, antennas, accessories, listening laws, equipment, information sources, more.
 \$14.95 + \$2 s/h (\$3 foreign)

Order now from your radio book dealer or

Tiara Publications
 PO Box 493M, Lake Geneva WI 53147

Catalog \$1, free with order. Visa/MasterCard

no greater joy can be found than listening to their receivers while quaffing a few brewskis. Okay, no problem, but how many receivers have ended up in the shop because they had beer accidentally spilled inside them? Also, at the risk of sounding like a temperance preacher, don't go servicing that user unserviceable gear while under the influence.

Don't get frazzled

The power cord coming out of the back of most electrical devices is usually subject to all manner of injustices during its life span. Don't let your cord run under rugs or where folks can step on it or trip over it. Also, don't dangle it down behind your desk in such a way that it is subject to abrasions from sharp corners of drawers or doors. A frayed cord can lead to a fire. You don't want to hear your own address come up on your scanner now, do you?

Avoidance behavior

If I haven't scared you completely away from the hobby with the above, you will probably reach the point where you will seek to install an outside antenna system. When stringing antenna wire or tower guy wires, take special care to make sure that your wires and cables *do not* pass over, under, around or near any existing outside powerlines including the main feed to your humble abode.

This assures that your antenna system will not come in direct contact with your neighborhood electrical service. Further, this will serve to assure your hair does not stand on end when you go to turn your rig on.

Lightning -- Big electricity

Lightning is devastating. None of your radio equipment can survive a direct lightning hit. Furthermore, even hits some distance from your home can generate voltages that will severely damage your gear. Obviously, it is highly desirable to keep lightning outside the home.

The only sure protection from lightning is to completely disconnect all of your equipment from all antennas and powerlines when a storm is in your area. Outside antennas should be grounded to allow for static discharge. Products billed as "lightning arresters" are really static discharge devices.

These components, along with surge protectors used on your wall outlets will help ward off some voltage and thereby protect your equipment. But the best course of action in combating lightning remains keeping it totally outside of your shack. The few minutes it takes to unhook and rehook your

equipment with each use is nothing compared to the weeks of waiting for your receiver to return from the repair center.

And you thought all you had to worry about was electricity

Keeping the friendly voltage monster in tow is really the biggie, but we do have a few other small concerns.

Heightophobia

As I mentioned earlier, as most folks progress in the pursuit of the radio hobby, sure as shootin' they are going to want to get up an outside antenna or two. With few exceptions, one general rule of antenna craft seems to be "get that puppy up as high as you can." This being the case, you will eventually find yourself climbing to the top of the highest object on your piece of real estate. If you get really serious, you may install a tower to create an even higher place for your antenna to rest.

Plan to climb carefully. Use safe ladders that are in proper working order and great condition. Do not set your ladders up where they or you can come in contact with existing powerlines. When we lose our balance, most of us have a tendency to reach out and grab the nearest anything for your support. If that anything is a powerline, your estate can donate your radios to the Uncle Skip Fried DXer Foundation. If that anything you grab is a loose roofing shingle or semi-attached piece of trim, you may find that you will have plenty of spare time to do your listening until the casts come off. So place your ladders carefully and plan your ascent into the heavens in as secure a manner as possible.

If you are someone who is fortunate enough to have a tower, always use an approved climbing belt for security.

Now that you have climbed to the top of your antenna system, you will probably discover that a supervisor or two have gathered to tell you what you already know. Do them a favor and have them wear hardhats in case you drop a tool.

If you are terrified of heights, get someone else to make the climb. If you are too nervous

up there you could get a bad case of the dizzies and accelerate your decent by falling. Also, don't try to steel your nerves with a couple of cans of liquid courage; alcohol will just throw your balance centers off. You may feel good on the way up, but you'll fall just as hard.

I only have ears for you

It may not be a potential killer, but hearing loss can ruin your lifelong pursuit of the radio hobby. When you really want to dig out some rare DX, it is fairly common practice to throw on the old earphones to make the catch. The whole purpose of this is to concentrate the sound so you can hear it better without interruption from the outside world.

What you must keep in mind is that the difference between concentrating the sound and producing sound that can have a negative effect on your hearing is an easy border to slip over. Look at it this way, you're digging under a couple of strong signals to route out some rare station so you crank up the gain control; the signal is fading so you crank up the gain control; there are a lot of static crashes so you crank up the gain control, etc.

Pretty soon, your significant other can hear the station too through the outside of your phones. You are so busy concentrating on the weak signal that you don't even notice the job that all these other signals are doing on your ears. Hearing loss can be a cumulative proposition. Ask any artilleryman or heavy metal fan. Be kind to your ears, they only issue two.

Fear not

You may not have noticed the thread of logic passing through my premise so I'll spell it out. Compadre, you only have to fear the above mentioned oblivion producers if you ignore the safety procedures that will protect you from harm. Always take the time to think things out so you will do them right. When in doubt, defer to someone with more experience. That's the best way to learn that I know.

The Prairie Navy

Dallas, Texas, is a long way from saltwater, my friend. As a result, when you tell people that there's a Navy base here, many people are surprised. All in all, though, it's not as odd as it sounds. It's just that at NAS Dallas their job happens to be patrolling the skies. And the wake of prairie dust kicked up by the brave men and women of Naval Air Station Dallas during the past five decades is not one bit less colorful for the lack of salt spray.

NAS Dallas was commissioned on 15 May 1941, with eight officers, 109 enlisted men and 35 freshly recruited flight students. During the war years, it became a major training base for student pilots, attracting some of the biggest celebrities of the day as they sought to entertain the sailors and troops defending this country. Old timers still remember the night back in '43 when Bing Crosby, Groucho Marx, Bob Hope and Claudett Colbert all played the base's newly renovated recreation center.

Today the war is over and the stars are gone but the work of the NAS Dallas is just as vital. A reserve training base for the Navy, every other branch of the service has a place here as well. There are 26 tenant commands, including two fighter squadrons (VF-201 and VF-202 flying the F-14 Tomcats), a transport squadron (VF-59 flying the C-9B), a Marine Corps air group and several units of the U.S. Army and Texas Air National Guard.

One of the main frequencies to listen to at NAS Dallas is the fire and crash channel. This activity can be heard on the Navy's nationwide fire and crash frequency allocation of 140.100 MHz. Table 1 lists the most current call sign list I have for the fire fighters and others at NAS Dallas.

Table 1
NAS Dallas Crash Freq Call Signs

Units ID as Dallas xxxxxx or ##

Control	Control Tower
1	Commanding officer (CO)
2	Executive officer (XO)
3	Command duty officer (CDO)
4	Operations department (OPS)
5	P-A7 Crash truck
6	MB-1 Crash truck
7	P-4 Crash truck
8	Crash boat
9	Road ambulance
10	Airfield ambulance
11	Fire chief vehicle
12	Road ambulance
13	Twin agent unit
14	Structural fire truck
15	Structural fire truck
16	Medical building
17	Ground electronics shop
20	LTV Vought control tower
21	Crash Truck (LTV)
23	Fire station (LTV)
26	Jeep (LTV)
27	Pickup truck (LTV)
28	Arresting gear truck
29	Operations radio truck
30	NAS fire station

- 31 Fire chief
- 32 Assistant fire chief
- 33 Runway alert shack
- 34 Transient line shack
- 35 Transient line shack
- 36 Transient line portable
- 37 Transient line (van)
- 38 Follow-me truck
- 39 Ground electronics
- 40 Ground electronics truck
- 41 GCA radar truck
- 42 Airfield electronics truck
- 43 Crash crane
- 44 PA-4A crash truck (TANG)
- 49 Runway vacuum sweeper
- 50 Mobile control tower
- 51 TANG Follow-me truck
- 52 TANG S.O.F. truck

Abbreviations:

- TANG - Texas Air National Guard
- S.O.F. - Safety of Flight
- GCA - Ground Controlled Approach Radar
- OMD - Organizational Maintenance Department

You probably noticed that I mentioned LTV Vought on the list. This military contractor shares the one runway at the base with the Navy. LTV Vought has produced several Naval aircraft over the years and uses the runways on an occasional basis at NAS Dallas for their test aircraft and contractor aircraft. In fact, several years ago the NASA Guppy aircraft brought some material to LTV by landing on the runways at NAS Dallas.

Like any military city, NAS Dallas has its own police force. They can be found on 140.580. Their call signs use the prefix "Sandpoint." Table 2 lists the Sandpoint call signs normally heard on NAS security frequencies.

Table II
NAS Dallas Security Call Signs

NOTE: 11 units use the Sandpoint call sign; others just their letter-number combination

Alpha	Security dispatcher
Alpha 1	Security officer (SO)
Alpha 2	Security chief of police (COP)
Alpha 3	Security assistant chief of police (ACOP)
Alpha Patrol 1	Security vehicle one
Alpha Patrol 2	Security vehicle two
Alpha Patrol 3	Security vehicle three
Alpha Post 1	Main gate sentry
Alpha Post 2	TANG (Texas Air National Guard) gate sentry
Alpha Post 3	Army gate sentry
Alpha Post 4	North Perimeter gate sentry (MAG-41 main gate)
Alpha Post 5	BEQ (Bachelor Enlisted Quarters) gate sentry
Alpha Post 6	Flightline sentry (VF flightline)
Alpha Rover 1	Foot patrol (as assigned)
Alpha Rover 2	Foot patrol (as assigned)
Bravo #	NAS Dallas base investigators (B1, B2, etc)
Charlie	NAS Dallas command duty officer (CDO)
Delta	NAS Dallas officer of the day (OOD)
Echo	NAS Dallas quarterdeck (POOW-petty officer of the watch)
Foxtrot	Naval Investigative Service Office (NISO)
Mike	Army security
November	TANG security
Quebec	Public works
Quebec 8	Public works boiler watch

- Yankee Commanding officer (CO)
- Xray Executive officer (XO)
- Zulu Ground electronics shop

For those of you who might not be familiar with some of the above terms, I'll try to catch you up a little bit. The security officer at a Navy base is the officer assigned by the Commanding Officer (the head cheese; in charge of the base) to run the base's security department. He is a naval officer who is on a shore duty tour and has department head status (assistants to the base CO).

The Chief of Police's rank varies but is usually a naval warrant officer, junior officer or very senior Chief Petty Officer. He pretty much runs the day to day operations of the security department. The ACOP or assistant chief of police is normally a Chief Petty Officer and is the administrative assistant to the COP.

Much like the security department, any naval command has an administrative assistant to the Commanding Officer or CO. That is the XO or executive officer. He handles routine administrative matters and is the CO's second in command. Normally both the CO and XO of a major naval shore command are senior officers (commander and above).

During each 24 hour period aboard NAS Dallas, certain personnel get what the Navy calls "duty." They must remain on board the station during the whole period. The person in charge of the duty section is the CDO or Command Duty Officer. The person who stands CDO is a naval officer and during their period of duty is a direct representative of the Commanding Officer of the base.

The CDO is assisted by the OOD (Officer of the Day). This person is usually a Chief Petty Officer (enlisted) and oversees the other members of that day's enlisted duty section. During the 24 hours aboard NAS Dallas someone has to answer the phone and there is a central number or duty office phone. That task is given to senior petty officers (enlisted) called POOW (Petty Officers of the Watch). This watch of waiting for the phone to ring usually lasts four hours so there are several POOWs each day. Once relieved by the next watch the off-going POOW is free to leave but must remain on call during the rest of the duty day in case his services are needed.

Most daily duty sections also have junior enlisted personnel standing duty also. Their duties consist of messenger of the watch (a runner for the POOW), duty driver (if someone important needs a ride, he drives) and roving security watches (foot patrols around the base). With the exception of the duty driver, all these watches last four hours then that person goes on call for the rest of the 24 hours.

Some of the other frequencies that Metroplex area monitors might hear from NAS Dallas include:

- 138.525 NAS Dallas fuel farm channel
- 138.700 NAVPRO (LTV) air-to-ground, ground-to-air

- 139.545 VF-202 Primary ground maintenance channel
- 140.050 AIMD (Aircraft Intermediate Maintenance Department) NAS Dallas Operations
- 140.075 Naval Investigative Service (NIS) channel 2
- 140.175 VF-201/VF-202 squadron F3 ground channel
- 140.220 NAVPRO (LTV) channel
- 140.320 NAS Dallas Supply Department
- 140.775 Naval Investigative Service (NIS) channel 1
- 140.895 VF-201 Primary ground maintenance channel
- 143.675 MARTD Mobile paging
- 143.700 Aircraft maintenance general
- 148.275 USAF ground transportation unit (Hensley Field)
- 149.150 TANG-136 ARW - Commanders Net (Hensley Field)
- 149.265 TANG-136 ARW - Aircraft maintenance
- 163.485 TANG security department (Hensley Field)
- 163.562 Hensley Field Command and Control/Emergency Disaster preparedness frequency

The following frequencies are listed for the Dallas area but their usage is unknown at this time:

- 139.100 Army-Dallas
- 139.150 Army-Dallas
- 140.650 Navy-NAS Dallas
- 142.450 Army-Dallas (possible MARS channel)
- 143.430 Army-Dallas (possible Corp of Engineers channel)
- 413.325 Hensley Field - usage unknown

Some Navy MARS channels that might be in use at the Naval Air Station and surrounding Metroplex area include:

- 148.350 148.950 148.410 148.375(repeater output)
- 148.975

Below are some other active military channels in the area around NAS Dallas.

- 139.025 Dallas Army/Air Force PX headquarters
- 143.025 Army - civil emergencies - Texas
- 143.800 USAF - Hensley Field - TANG command and control
- 46.800 Army National Guard Helicopters - NAS Dallas
- 34.700 Army Reserve helicopters - NAS Dallas

Finally, the following aircraft frequencies are used around the NAS Dallas area:

- ATIS (Automatic Terminal Information Service) 278.0
- Regional Approach Control 123.9 124.5 125.2 252.9 372.1
- NAS Dallas Tower 126.2 (336.4 Army/NG helos) 340.2 360.2
- NAS Dallas ground control 134.1 382.8
- Regional departure control 118.55 364.0 - East, 120.5 127.75 227.8 - West
- Texas Air National Guard Ops (TANG) 300.75
- National Guard Copter Ops 46.8 FM 242.6
- Army Operations 34.7FM
- Base operations/PMSV: Metro 263.5

And so, although much has changed over the Naval Air Station Dallas' history during the nearly five decades, one thing will remain always: the land-locked sailors of the Dallas area seldom feel the spray of saltwater. They are the Prairie Navy and proud of it.

I would like to thank my faithful assistant, Sue Kennedy, for her valuable insight and help in preparing this section of Federal File column.



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Help for a friend

A good friend down south, Fred Cottonelle, has written to me, asking for a favor. He says, "I have scanned, searched and hunted near and far for the operations frequencies used by the Guntersville Military Operational Area (MOA) down around Georgia, Alabama and Tennessee way. No luck so far. Do you, 'old frequency breath,' know the answer?"

Well, sir, your request is "frequency breath's" command. The Guntersville MOA is controlled by the Atlanta ARTCC out of the Uniontown remote site. It is a low level, up to 11,000 feet MOA. I show the Departure/Recovery frequency pair to be 132.25/297.4 MHz. Additional frequencies I have listed for the MOA are 252.9, 352.8 and 339.1 MHz. You might also want to check the following Uniontown remote site frequencies for

additional activity in and around the MOA: 133.25 and 351.9 MHz.

Hope that helps and hope to hear from you again real soon.

Speaking of Cubos...

Speaking of Cubos, one *Monitoring Times* reader asks for my Cubo recipe. Well, here's how Sue fixes 'em up for me. Take one shot of your favorite rum (I like Bacardi) add generous amounts of ice and Coca Cola, squeeze the contents of one-half a lime into the glass and stir to taste. Hummm. Sound's pretty good. "Oh Sue!"

Until next month, good listening and good DX to all. Remember before the next issue gets into your hands be sure to send in your federal frequency list to the column, c/o MT.



Touring the Mediterranean

In this month's radio cruise, our first stop is Greece and its main coast station, Athens Radio. Athens Radio uses several callsigns which, used in conjunction with a number, indicate the band in question. In this case the following callsigns are used: SVA, SVB, SVD, SVF, SVG, SVI, SVM, SVS, SVT, SVU, used on these frequencies:

SVD 2 4.2230	SVD 825.5350
SVB 2 4.2394	SVI 5 12.8590
SVF 2 4.3270	SVG 512.9420
SVA 2 4.3430	SVA 513.0290
SVB 3 6.3440	SVA 513.0470
SVD 3 6.4110	SVM 616.9030
SVF 3 6.4445	SVI 6 16.9660
SVA 3 6.4784	SVG 616.9815
SVG 4 8.4545	SVF 617.9955
SVJ 4 8.5300	SVA 617.0948
SVD 4 8.5365	SVJ 6 17.1472
SVI 4 8.6815	SVD 617.1880
SVA 4 8.6870	SVB 617.1944
SVF 4 8.6900	SVG 722.3275
SVF 4 8.6925	SVI 7 22.3465
SVB 4 8.7040	SVB 722.4108
SVD 512.7200	SVA 722.4170
SVF 5 12.8330	SVD 722.4715
SVA 825.4010	SVF 722.5000



All of the above frequencies are for CW. The following are SSB frequencies for Athens radio.

SVN 2 4.3946	SVN 513.1597
SVN 2 4.4008	SVN 513.1969
SVN 2 4.4287	SVN 617.2515
SVN 2 4.4318	SVN 617.2577
SVN 3 6.5126	SVN 617.3073
SVN 4 8.7220	SVN 617.3104
SVN 4 8.7344	SVN 617.3135
SVN 4 8.7406	SVN 617.3197
SVN 4 8.7437	SVN 617.3538
SVN 4 8.7592	SVN 722.6208
SVN 4 8.7747	SVN 722.6456
SVN 4 8.7778	SVN 722.6519
SVN 4 8.7871	SVN 722.6673
SVN 513.1101	SVN 722.6890
SVN 513.1194	SVN 722.7014
SVN 513.1349	

For those of you who want to try RTTY, Athens should be found on the following frequencies:

SVS 2 4.3525	SVS 5 13.0795
SVU 2 4.3560	SVT 5 13.0825
SNS 3 6.4995	SVT 6 17.2085
SVU 3 6.5020	SVU 517.2215
SVS 4 8.7100	SVT 722.5725
SVU 4 8.7125	SVU 722.5855

Next comes the ever interesting Libya whose CW stations can be found on:

4.2410	5AL	Tobruk Radio
8.4800	5AL	Tobruk Radio
8.5150	5AT	Tripoli Radio
16.9630	5AL	Tobruk Radio

Tripoli Radio 5AT can be found on SSB using:

2.1820	4.3838	8.7608
2.1970	4.4349	8.8002
2.3200	6.5000	13.1300
2.4180	6.5186	13.1475
4.3680	8.7456	13.1825

Next is Algeria. Alger Radio (7TA) operates on the following CW frequencies:

7TA 2	4.2880
7TA 3	4.2880
7TA 4	6.4150
7TA 6	8.4370
7TA 8	12.6620
7TA 10	16.9320
7TA 12	22.5430

Their SSB frequencies are:

7TA 13	4.3853	7TA 25	13.1442
7TA 14	4.3946	7TA 26	13.1504
7TA 15	4.4287	7TA 27	13.1969
7TA 16	4.4349	7TA 28	17.3197
7TA 17	6.5064	7TA 29	17.3259
7TA 18	6.5126	7TA 30	17.3414
7TA 19	6.5188	7TA 31	17.3569
7TA 20	8.7228	7TA 32	22.6084
7TA 21	8.7437	7TA 33	22.6704
7TA 22	8.7561	7TA 34	22.6766
7TA 23	8.7933	7TA 35	22.7104
7TA 24	13.1194		



As we move to the north side of the ocean, there is Aranjuez Radio in Spain on the following CW frequencies:

EDF 4.2355	EDF 4412.6910
EDZ 4.2695	EAD 4412.8875
EAD 4.3490	EIZ 5 12.9345
EFD 2 6.3300	EDG 4 13.0560
EDG 2 6.3370	EAD 4 13.0650
EAD 2 6.3822	EDF 5 16.9428
EDZ 2 6.4002	EDZ 6 17.0648
EDG 3 8.4570	EDG 5 17.1752
EDF 3 8.4730	EAD 5 17.1848
EDZ 4 8.6180	EDF 6 22.3840
EAD 3 8.6820	EAD 6 22.4460
EDF 4 12.6735	EDZ 7 22.5330

In Italy Genoa Radio's callsign ICB can be found in CW on the following frequencies:

4235.0	16879.0
6425.0	16881.0
8649.5	16970.0
12978.0	17182.0



Genoa Radio also uses the following SSB frequencies:

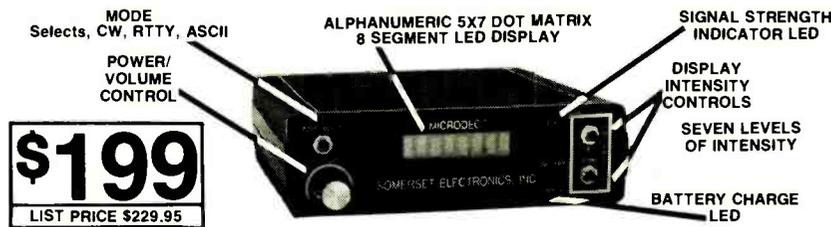
4.3822	13.1318
4.7391	17.2546
8.7344	17.2732
8.7871	22.6425
13.1132	

The major Italian coast station is Rome Radio, which can make interesting listening since the station handles some of the traffic destined for the Centre International Radio Medical, which also has its own station located in Rome. On CW they can be found on the following frequencies:

IAR 24	4.2920	IAR 23	13.0110
IAR 4	4.3200	IAR 3	13.0155
IAR 26	6.4180	IAR 7	16.8955
IAR 6	6.4095	IAR 37	17.0050
IAR 28	8.5300	IAR 27	17.1608
IAR 38	8.6560	IAR 2	22.3760
IAR 8	8.7600	IAR 32	22.3780
IAR 33	12.9960		

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4.3605	8.7778	17.2391
4.3915	8.7964	17.2484
4.4163	8.8119	17.2794
4.4256	13.1163	17.3042
6.5095	13.1256	22.5991
6.5157	13.1380	22.6270
8.7592	13.1535	22.6642
8.7747	13.1907	22.7076

Rome's RTTY traffic should be found on:

IAR 4	4.3500	IAR 58	8.7145
IAR 24	4.3515	IAR 3	13.0895
IAR 34	4.3545	IAR 23	13.0915
IAR 44	4.3565	IAR 33	13.0945
IAR 6	6.4965	IAR 43	13.0965
IAR 26	6.4990	IAR 53	13.0980
IAR 36	6.5015	IAR 7	17.2070
IAR 46	6.5035	IAR 27	17.2110
IAR 8	8.7065	IAR 37	17.2140
IAR 28	8.7075	IAR 47	17.2245
IAR 38	8.7103	IAR 57	17.2305
IAR 48	8.7115	IAR 2	22.5715
IAR 22	22.5745		
IAR 32	22.5830		
IAR 42	22.5920		

As was mentioned above, the C.I.R.M. has its own coast station (IRM) and it can be found on the following frequencies:

4.3425	6.4200	12.7600
4.3505	8.6850	17.1050
6.3650	12.7480	22.5250

All of these frequencies are CW; voice and telex messages are handled through Rome Radio (IAR).

Next is Yugoslavia which has several stations. Try these CW frequencies:

4.3460	YUR 2	Rijeka Radio
4.3550	YUW	Bar Radio
6.5020	YUW	Bar Radio
8.4450	YUR 4	Rijeka Radio
8.7000	YUR 3	Rijeka Radio
8.7120	YUW	Bar Radio
12.7805	YUR 5	Rijeka Radio
12.9075	YUR 6	Rijeka Radio
13.0880	YUW	Bar Radio
16.9428	YUR 7	Rijeka Radio
17.0456	YUR 8	Rijeka Radio
17.2200	YUW	Bar Radio
22.4436	YUR 9	Rijeka Radio
22.5850	YUW	Bar Radio

The following SSB frequencies are also used:

4.3574	YUS	Split Radio
4.3791	YUR	Rijeka Radio
4.4070	YUW	Bar Radio
4.4132	YUR	Rijeka Radio
4.4194	YUR	Rijeka Radio

6.5064	YUW	Bar Radio
6.5095	YUR	Rijeka Radio
6.5157	YUS	Split Radio
6.5188	YUR	Rijeka Radio
6.5219	YUR	Rijeka Radio
8.7468	YUR	Rijeka Radio
8.7499	YUR	Rijeka Radio
8.7809	YUR	Rijeka Radio
8.7840	YUS	Split Radio
8.7995	YUW	Bar Radio
8.8088	YUR	Rijeka Radio
12.1628	YUR	Rijeka Radio
13.1199	YUW	Bar Radio
13.1721	YUR	Rijeka Radio
13.1814	YUS	Split Radio
13.1876	YUR	Rijeka Radio
17.2639	YUR	Rijeka Radio
17.2856	YUS	Split Radio
17.2949	YUR	Rijeka Radio
17.3135	YUR	Rijeka Radio
17.3476	YUW	Bar Radio
22.6053	YUR	Rijeka Radio
22.6115	YUR	Rijeka Radio
22.6585	YUR	Rijeka Radio
22.7138	YUR	Rijeka Radio

RTTY fans can try these:

4.3526	YUR	Rijeka Radio
4.3530	YUS	Split Radio
4.3540	YUR	Rijeka Radio
6.4960	YUR	Rijeka Radio
6.4980	YUR	Rijeka Radio
6.4990	YUR	Rijeka Radio
8.7060	YUR	Rijeka Radio
8.7080	YUR	Rijeka Radio
8.7100	YUR	Rijeka Radio
13.0760	YUR	Rijeka Radio
13.0790	YUR	Rijeka Radio
13.0840	YUS	Split Radio
17.2040	YUR	Rijeka Radio
17.2140	YUR	Rijeka Radio

17.2160	YUR	Rijeka Radio
22.5710	YUR	Rijeka Radio
22.5760	YUR	Rijeka Radio
22.5820	YUS	Split Radio

The last country is Albania whose CW stations can be found on:

4.2200	ZAD	Durres P.T. Radio
4.3020	ZAC	Shengjin P.T. Radio
4.3020	ZAD	Durres P.T. Radio
4.3020	ZAS	Sarande P.T. Radio
4.3020	ZAV	Viore P.T. Radio
6.3105	ZAS	Sarande P.T. Radio
6.4340	ZAD	Durres P.T. Radio
6.4340	ZAS	Sarande P.T. Radio
8.6960	ZAD	Durres P.T. Radio
12.6900	ZAD	Durres P.T. Radio
17.1730	ZAD	Durres P.T. Radio

For voice traffic, try the following:

4.3605	ZAD	Durres P.T. Radio
4.3729	ZAV	Viore P.T. Radio
8.7313	ZAD	Durres P.T. Radio
13.1163	ZAD	Durres P.T. Radio
17.3507	ZAD	Durres P.T. Radio
22.6735	ZAD	Durres P.T. Radio

This concludes our tour of the Mediterranean area. I hope you will find some new listening from among these stations.

Since my next column will be in January, may I take this opportunity to wish you all a Merry Christmas, Happy Hanukkah and peace, health and success in the new year.



What's Your Specialty?

We've already told you about a type of amateur radio that few people know about — amateur "fast scan" television. Thanks for the cards and letters and interest in this facet of UHF video signals. This month, we'll take a look at how shortwave listeners can, without spending too much money, view radioteletype (RTTY) copy and slow scan TV (SSTV) on their TV sets.

Radio Shack's TRS80 Color Computer are perfect for RTTY and SSTV use. And because the white colored 64K model COCO-2 unit is no longer manufactured, they can often be found for as little as \$50.00 in some stores or ham flea markets.

By the way, you do not necessarily have to have an expensive disk drive system to run the COCO. Radio Shack also sells an inexpensive \$39.95 (on-sale) cassette recorder/player that plugs into the computer. Any cassette recorder, however, will work if the unit has a steady 110VAC powered motor drive function requirement and good high quality audio reproduction.

Now, you're going to have to get your computer working with your radio. Ham Radio Software (P.O. Box H, Lowden, Iowa 52255) has some neat "interfaceless" radioteletype communications software that works well with this computer. Simply load in a machine language software program called "COCORTTY" (\$29.95 on cassette or disk) into the computer, and bring over an audio cable tapped from the speaker or headphone jack of your radio and plug it into the earphone jack of your cassette recorder and computer. (A miniature Y-jack plug or cable and \$4.95 cassette cable is required.)

The result is stunning: you will have upgraded your radio room with new visual capabilities by being able to "printout" on your TV screen (standard TV set) all of the 60 to 100 word per minute BAUDOT RTTY teletype signals being sent from local (146.700 MHz FM) and international sources (7.090-7.100, 14.090-14.100 and elsewhere!)

You will be amazed at how well this software/computer combination works for you. Copy commercial, press, amateur and government RTTY signals at 170 Hz shift. (Always use the Lower Sideband (LSB) mode of tuning.) A special on-screen bar graph allows smooth correct tuning of the chirping 5-level signals.

If you are interested in this or other applications, send an SASE and I'll return you some additional information. Mark clearly on the outside of your envelope: *Monitoring Times Shortwave Computer Info.*

Amateur Ham Radio "Slow-Scan" TV

pictures can be viewed on this inexpensive computer with the same hookup but with a different software program. "COCOSSTV" (same company and price) is available which allows the reception of 128 pixel by 128 line (and other mode format speeds) still-frame B/W and (false) color pictures. Tune in on 14.230 MHz on the 20 Meter Ham band or 28.680 MHz on the 10 Meter Ham band and listen for these signals right now. You'll also hear amateur radio operators actually talking in between the pictures they send.

Adding both computerized RTTY and SSTV capabilities to your shortwave monitoring system will add and enhance hundreds of hours of viewing and listening enjoyment!

Special Interest Net

Amateur radio is an exciting hobby that has something of interest for virtually everyone. There's satellite communications, computer-to-computer message systems (called "packet"), "ragchewing" between stations located thousands of miles away, amateur television (see last month's column), awards, message handling (called "traffic") and experimenting with new methods of communications.

A wide number of groups are represented within the ranks of amateur radio. There are groups for physicians who are hams. There are groups who meet each week (usually called "nets" who share interests in retired life, mission work, solar energy and more.

The Lambda Amateur Radio Club (LARC) is one such group, serving the gay and lesbian ham since 1975.

LARC saw its first local chapter formed in the San Francisco area, called the "Golden Gate Chapter." Before long, membership consisted of about two dozen people in the U.S. and Canada. A Washington D.C. "Potomac Chapter" was soon added.

LARC grew slowly and operated informally until 1984, when an aggressive campaign was launched to seek out new members and to publicize the existence of the club. Today, LARC chapters are breaking out across the United States, Canada and Great Britain, each designed to offer a social environment and a local, friendly, support group to aid in the enjoyment of ham radio. Membership, according to President Jim Kelly, KK3K, is increasing by 60% a year with the highest interest coming from England.

LARC members maintain a number of on-the-air meetings for members every week. Members are also eligible to receive, along

with their monthly *Lambda Net News*, various awards for communicating with other members and for exceptional proficiency.

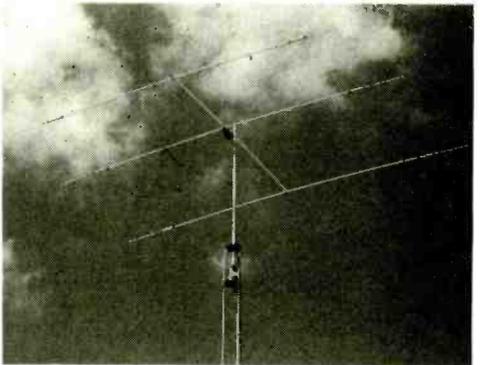
For more information on LARC, contact the club at P.O. Box 24810, Philadelphia, PA 19130 or call 215-978-LARC.

Three Element Beam

You can enjoy the excitement of the new WARC bands with the new A3WS beam antenna by Cushcraft. With a sturdy all-aluminum design, this WARC beam features pinned boom sections, heavy duty element mounts and all stainless steel clamps.

Offering 8dB forward gain, the A3WS is a high performance Yagi on 12 and 17 meters. With the addition of the A103 add-on kit, it will also cover 30 meters.

The A3WS has a 14 foot boom and takes a 1.5 to 2.0 inch mast size, making it easy to install on your existing support. The antenna is rated for 2000 watts PEP and takes standard 50 ohm coax.



You can get more information by writing to Cushcraft, P.O. Box 4680, Manchester, New Hampshire 03108 or stopping in at your favorite ham store. Retail is \$350.00.

Hams at War

Granted, it's only a hypothetical situation but what would happen to ham radio if war broke out in the Persian Gulf? Under Section 706 (c) of the Communications Act and Parts 201-215 of Title 47 of the Code of Federal Regulations, the President of the United States does have the power to suspend all amateur communications. That's not likely to happen, even if a shooting war does break out. Still, if things would get close to home -- literally -- the President does have the option to shut down all unnecessary transmitters that could be used as homing beacons for enemy attack.

Texas Super System

Gordon West writes about some information one of his readers (Andy Lange) picked up at a local hamfest in Texas. "The



Amateur Radio 1990 Equipment Buyer's Guide



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76 North Broadway, Hicksville, NY 11801

West Texas Connection" describes a system of repeaters -- some located in quite remote areas -- that link together to give amateurs a coverage area of over 100,000 square miles. The information sheet indicates plans to include linking in and out of Dallas, Houston, and Amarillo. The system is comprised of 146.700 VHF and 444.100 UHF back-to-back repeaters operating via 450 MHz simplex.

To get a copy of the flyer, called "Texas Super System," write to WB5RXA, 4900 Foxboro, Midland, TX 79705. Be sure to include a double-stamped self-addressed envelope.

West also mentions another freebie, a map showing links all over the southwest on ham radio. You can get that for a self addressed stamped envelope from Bud Turner, N7EOJ, 120 W. River Road, Tucson, AZ 85704. It describes the Western Amateur Radio Packet Radio Network. Thanks to Gordon West and RCMA for that one.

DX Tips

We are honored to welcome Rob Gerardi of Benton, Illinois, to the Ham column as editor of our DXing tips. Here are Rob's last-minute tips for November:

ARUBA: W2GD, John Croelli, will operate from this Caribbean island 20-27 November. John will concentrate on code for the *CQ World Wide CW* contest (24-25th) with activity on 17 and 12 meters SSB before

and after the contest. He will also be on 160 meters each hour on the hour 2200 to 1000 UTC. QSL to: N2MM, Howard Miller, 61 Mill Rd RFD 11, Vincetown, NJ 08088.

KAMPUCHEA: XU8DX has been a regular on 14180 kHz daily at 1100 UTC as well as 21275 kHz at 0200 UTC. QSL to: JA1NUT, Sin Onizawa, 100-9 Naka, Mohka, Tochig, Japan.

LATVIA: The Latvian DX Club will operate special call sign station RQ9W during all contests for the remainder of 1990 and 1991. QSL to: Igor Kuzhelev, P.O. Box 418, Riga, 22601 Latvia, USSR.

MARION ISLAND: The current operator of ZS8MI keeps a regular schedule as follows: 28505 kHz at 1430 UTC daily and 14205 kHz at 1600 UTC daily. QSL to his home address: Gerhard, P.O. Box 13077, Jacobs 4026, Natal, Rep. of South Africa.

SRI LANKA: 4S7EA is on 21300 UTC each day starting at 2400 UTC. His QSL address is: E. Amarasinghe, 275-6 Colombo Rd., Divul Pitija, Boralesgamuwa, Sri Lanka.

Rob reports on a new publication dealing with reports on amateur radio and hams in the USSR that will be available in English starting January 1991. Entitled *Soviet Ham Press Digest*, it can be had for a \$12 (US) annual subscription fee. For additional information or subscription contact: George Yankopolus, 13 Glen Meadow Dr, Glen Mills, PA 19342.

KE2OP and several other hams are attempting to establish direction-finding nets

to help eliminate the deliberate jammers and QRM'ers on the bands. Look for their net on 14235 kHz at 1500 UTC each Tuesday.

Special Events Station

This month marks yet another special events station to try for. Called "Live from the Island," W4IAX will operate from Dauphin Island, Alabama, from 1300 UTC November 17 until 0000 UTC on November 18th. Frequencies will be 3925, 7225, 14225, 21325, 28325 MHz.

This special events station will issue QSL cards to shortwave listeners. All you need do is send a note mentioning the time and frequency the station (W4IAX) was heard. Rick Wiles, W4PRQ, who will be running the station is a *Monitoring Times* reader who says "I have been a ham for only three years but a shortwave listener for 20."

For your QSL send a business-size self addressed, stamped envelope along with \$1.00 to cover costs to: W4IAX, Mobile Amateur Radio Club, P.O. Box 9315, Mobile, Alabama 36691.

Thanks to everyone for their help in making this column possible. We appreciate your questions, comments -- even clippings -- about ham radio. Send them to: Ham Radio, *Monitoring Times*, P.O. Box 98, Brasstown, NC 28902. And thanks!



AUSTRALIA

6WF Perth-720 AM/4QD Emerald, Queenstown-1548-AM kHz. Full data cards for both frequencies, without verification signer. Received in 38 days for an English AM report. Station address: Australian Broadcasting Corp., P.O. Box 9994, GPO, Sydney, NSW, Australia. (Dick Moon, George, S. Africa)

CANADA

Beacon "B" 266 kHz. Full data prepared form card, verified by J.B. MacSween. Received in 11 days for an English utility report and an SASE. Station address: Transport Canada, Hamilton Airport, Mt. Hope, Ontario LOR 1W0 (Russ Hill, Oak Park, MI)

Beacon "L" 368 kHz (Toronto). Full data prepared QSL card, and personal letter verified by E.C. Wyatt, Navais Manager. Received in 18 days for an English utility report and an SASE. Station address: Transport Canada, Lester B. Pearson International Airport, 2490 Britannia Road East, Mississauga, Ont. L4W 2P7 (Russ Hill, Oak Park, MI)

Gander Aeradio, 10051.0 kHz. Full data verified QSL letter and sticker. Verified by Wayne J. Lorenzen. Received in six months for an English utility report and mint stamps. Station address: 89 Edinburgh Ave., Gander, Newfoundland, Canada A1V 1C9 (Fraser Bonnett, Fairborn, OH) (Mike Hardester, Okinawa, Japan)

CZECHOSLOVAKIA

Radio Prague International. 7345, 5930 and 11990 kHz. Full data scenery QSL card, with illegible signature. Received in 33 days for an English report. Station address: English Language Broadcasts, Prague 12099, Czechoslovakia. (Nicholas Adams, Newark, NJ) (John Carson, Norman, OK) (Frank Hillton, Charleston, SC)

GUATEMALA

Radio Tezulutlan, 4835 kHz. Full data QSL card (photo of village procession), without verification signer. Station information letter signed by Antonio Jacobs, director of ejecutivo. Received in 75 days for a Spanish follow-up report and mint stamps. Station address: Apartado 19, 16901 Coban, a.V. Guatemala, C. America (Robert Landau, Secaucus, NJ) (Sam Wright, Biloxi, MS)

INDONESIA

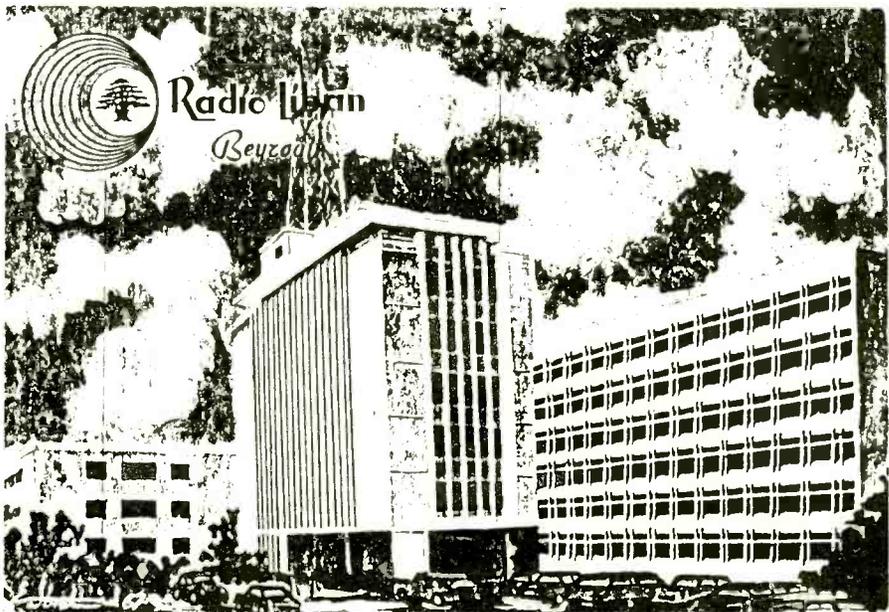
Radio Republik Indonesia, 15154.6 kHz. Partial data QSL card verified by Drs. R. Baskara, station manager. Received in 60 days for a follow-up report and mint stamps. Station address: RRI Nasional, Merdeka Barat 4-5, P.O. Box 356, Jakarta, Indonesia. (Robert Landau, Secaucus, NJ)

JAPAN

Japan Meteorological Agency, 14880 kHz USB. Full data typed letter, with illegible signature. Received in 12 days for an English utility report and one U.S. dollar for return postage. Station address: 1-2-4 Ote-machi, Chiyoda-ku, Tokyo, Japan (Hugh Hawkins, Port Gibson, MS)

KENYA

Kenya Aeradio, 8165 kHz USB. Full data pink colored paper, verified by N. Nguku, director, civil aviation. Received in 24 days for an English utility



Radio Liban, Beirut, received by Ken Grey, Manchester, NH (photocopy)

report and one U.S. dollar for return postage. Station address: P.O. Box 30163, Nairobi, Kenya (Hugh Hawkins, Port Gibson, MS)

MALAYSIA

Penang Radio 9MG, 22456 kHz. Full data verified letter by Kanda Kumar, radio telegraph master. Received in 100 days for an English utility report and two U.S. dollars. Station address: Stesen Pantai (Pnerimaan) Penang Radio, Syarikat Telekom Malaysia Berhad, Kuala Muda, 13110 Penaga, Seberang Perai, West Malaysia (Gunter Wurr, Cuxhaven, West Germany)

PIRATES

East Coast Pirate Radio, 7484 kHz. Full data QSL letter verified by N. Tesla. Received in 20 days for an English report and mint stamps. Station address: P.O. Box 6527, Baltimore, Maryland 21219 (Fraser Bonnett, Fairborn, OH)

SHIP TRAFFIC

Pride of Baltimore II-WUW-2120 (topsail vessel, replica of the Pride I, War of 1812) 156.8 MHz. Full data verified letter and pamphlet on the ship. Received in 34 days for an English utility report and return postage. Ship address: Pride of Baltimore, Inc., 100 Light St., Baltimore, MD-21202 (Hank Holbrook, Dunkirk, MD) Letter included comments they were bound for Poland, and will return to the US in summer of 1992.-ed.

Athenian Beauty-H2VY (product tanker), 500 kHz. Full data prepared QSL card and photo of ship. Received in 104 days for an English utility report and return postage. Ship address: Interstra Co., S.A., 10-12 Kifisias Ave., Amarousion, Athens, Greece (Hank Holbrook, Dunkirk, MD)

Bulkplotus-3EKH3 (bulk carrier), 500 kHz. Full data HAM QSL card (11FGK) with IBYS info typed in. Received in 54 days for an English utility report and return postage. Ship address: Bulkitalia, S.p.a.-via Martin Piaggio, 17/6, 16122 Genova, Italy (Hank Holbrook, Dunkirk, MD) Italian flag #43 QSLed.-ed.

SOUTH AFRICA

Cape Town Radio ZSC Time Station, 17018 kHz. Full data QSL card verified by J.G. Nothanagel, control coastal radio officer. Received in 77 days for an English utility report. Station address: Cape Town Radio ZSC, Chief Superintendent, Private Bag, Milnerton 7435, Republic of South Africa. (Gunter Wurr, Cuxhaven, West Germany)

UNITED STATES

Beacon "LYL", 362 kHz. Full data prepared card verified by Todd Carpineto, manager. Received in 29 days for an English utility report and an SASE. Station address: Allen Co. Airport, 700 Airport Dr., Lima, Ohio 45804 (Russ Hill, Oak Park, MI)

KKAR-1180 AM. Full data verified letter by Allen Sherrill, C.E. Received in seven days for an English AM report and US mint postage. Station address: 1001 Farnam-On-the-Mall, Omaha, NE 68102 (Randy Stewart, Springfield, MO)

KOKK-1210 AM. Partial data verified letter by Daniela Jury. Received in 14 days for an English report and US mint postage. Station address: P.O. Box 931, Huron, SD 57350 (Randy Stewart, Springfield, MO)

WNDE-1260 AM. Partial data letter verified by Daniel J. Mettler, C.E. Received in 11 days for an English AM report and an SASE. Station address: 6161 Fall Creek Road, Indianapolis, IN 46220 (Harold Frodge, Midland, MI)

WHAS-840 AM. Partial data QSL card, without verification signer. Received in 14 days for an English AM report and mint stamps. Station address: P.O. Box 1084, Louisville, KY 40201 (Darren White, New Augustus, MS)

WHO-1040 AM. Partial data QSL card, without verification signer. Received in 26 days for an English AM report and mint stamps. Station address: P1801 Grand Avenue, Des Moines, IA 50308 (Darren White, New Augustus, MS)

WGCI-1390 AM. Full data logo card verified by Cicero Miller. Received in six days for an English AM report and an SASE. Station address: 3325 Michigan Ave. Suite 600, Chicago, IL 60604 (Harold Frodge, Midland, MI)

USSR

Radio Minsk, 7400 kHz. Full data scenery card of Lenin Square, with illegible signature. Received in 168 days for an English report. Station address: Krasnaya 4, Minsk 220807, Byelorussian SSR, USSR. (Nicholas Adams, Newark, NJ)

VATICAN CITY

Vatican Radio, 9605 kHz. Full data scenery QSL, without verification signer. Received in 70 days for an English report and one IRC. Station address: English Programmes, 00120 Vatican City, Vatican City State, Italy. (Nicholas Adams, Newark, NJ) (John Carson, Norman, OK)

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DSP: A New Technology for your Shack or Listening Post

Have you ever heard of a DSP, FFT or FIR? How about an IIR, ADC or DAC? Some day these acronyms will be as common as SWL, HF or RTTY. They are, in fact, terms that are used in conjunction with a new technology called Digital Signal Processing. A DSP is actually a microprocessor that, for some applications, has an audio input and output.

The input is connected to a micro-chip called the ADC or Analog to Digital Converter. It converts an audio signal to digital data and sends it to the DSP Chip (see Figure 1). The DSP processes the information and sends the new data to the computer or to the DAC (Digital to Analog Converter). The DAC will provide an audio signal which can be connected to a speaker amplifier or an oscilloscope. Several ADCs or DACs can be used in a DSP system. The computer can, for example, act as a control panel or a graphics interface for FAX or a chart recorder.

The microprocessor also communicates to another chip which is called the RAM (Random Access Memory). The RAM contains a computer program which instructs the DSP to perform a certain function. The program can simulate an audio filter, an RTTY decoder, an audio spectrum analyzer or even a Motley Crew (Heavy Metal) to Mitch Miller musical converter. The latter may be somewhat difficult because it may require several megabytes of RAM. The capabilities of such a device in the shack or listening post is limitless.

You can connect the audio output of your shortwave receiver to your computer and use it to digitally record voice or an RTTY signal and store it on a floppy or hard disk. You can also use your computer as a digital storage oscilloscope.

An audio spectrum analyzer is a piece of test equipment that is untouchable to a ham or shortwave listener because of cost. The same DSP unit in conjunction with your computer can open a new world of RTTY listening. Have you ever seen a spectrum analyzer or

panoramic display? If you have, you are probably familiar with the "pips." The pips represent each signal that is present within the audio spectrum. Figure 2 is an actual display that was drawn by a \$25,000 HP signal analyzer and an \$800 HP plotter. Would you like one or two in your shack?

The SWL/DSP unit could have software for your PC that would allow you to display a similar picture. But let's say you have interference on the band, which is represented by the other pips in Figure 2, and you want to eliminate it. You could use your computer mouse to place a cursor over the pips and by clicking the mouse button the interference can disappear from the speaker.

The above scenario is possible because a special computer program called an IIR (Infinite Impulse Response) or FIR (Finite Impulse Response) filter can be loaded into the RAM of the DSP unit. They are actually computer softwares. They instruct the DSP to simulate an audio filter and to send the results to the DAC. FIR's and IIR's are very complicated and involve difficult mathematical formulas which are far beyond the scope of this column.

The DSP can handle it because it's a special processor that is designed to handle math problems very quickly. The speed is so fast that the audio signals are processed in "real time." DSP chips can run on a 40 MHz crystal. That's fast, considering the average home computer operates at 8 or 12 MHz. An FFT is another math program which is used to display the pips or to simulate the spectrum analyzer.

For the most part, the DSP can be a filter but

it can also be programmed to simulate an RTTY or even a piccolo multitone decoder. The DSP can decode the tones and send the results to the PC. The PC will then display the text on the monitor. I wouldn't be surprised if it could copy the military 16 or 39 tone system which I talked about several issues ago. A product such as this is just around the corner. In fact, several DSP units were introduced at the Dayton Hamfest this year and will be available by Christmas.

A few readers were asking if that was me on CNN during a report about the tornado that hit the Joliet, Illinois, area last August. I have to confess I was helping out by providing communications for the Red Cross and Salvation Army in conjunction with IESDA (Illinois Emergency Service and Disaster Agency). The reporter was passing by my van while I was talking on the 2-meter radio.

Here's a list of current DSP manufacturers for ham radio:

Advanced Electronic Applications
2006 196th St. SW
Lynwood, WA
98036 telephone 206-775-7373

LL Grace Communications
41 Acadia Drive
Voorhees, New Jersey
08043 telephone 609-751-1018

DFRSI
2065 Range Road
Clearwater, Florida
34625 telephone 800-999-0204

Intellhome
571 Responsive Way
McKinney, Texas
75069 telephone 214-548-8503

NNN

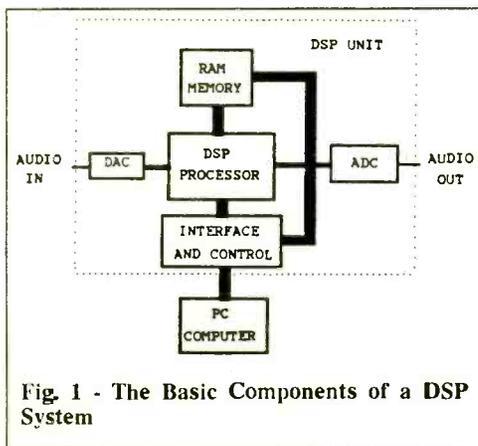


Fig. 1 - The Basic Components of a DSP System

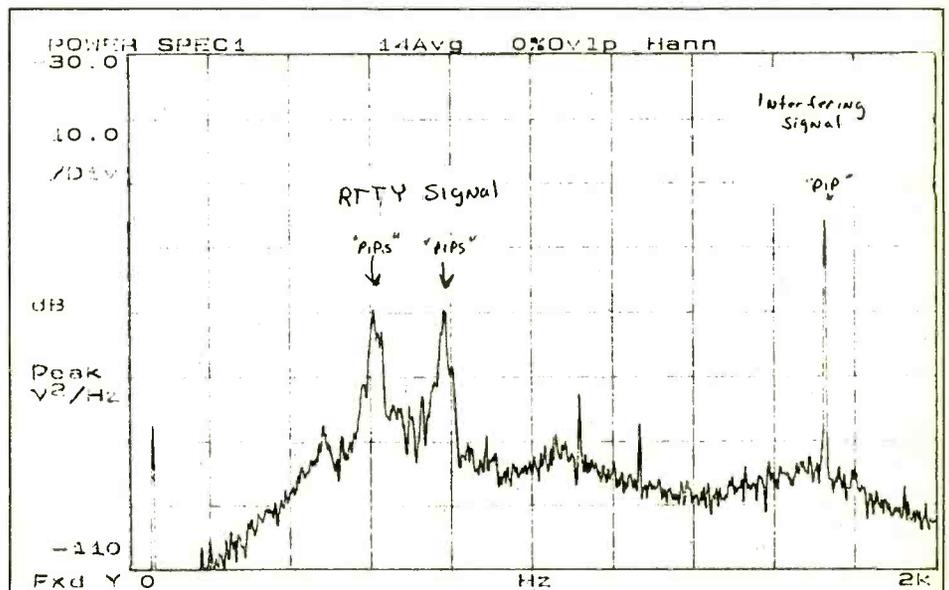


Fig. 2 - Actual printout from a \$25,000 HP DSP analyzer and an SW receiver at 16.907 Hz.

The Sporting Side of TVRO

With the last out of the World Series a fading memory and the nights getting longer and colder, the home dish owner is thankful for the plethora of sports available. When questioned closely, the TVRO enthusiast will talk at length about F/D ratio, HEMT LNBs and engage in ferocious debate on the merits of horizon-to-horizon VS linear actuators. But the simple fact is that most dish owners are unashamed sports enthusiasts. Better make that sports *nuts*.

Even now, nearly four years after the advent of scrambling, the amount of sports programming via satellite is staggering. But it's the winter season that makes this so obvious. Here is the college and professional football season, the college and pro hockey season, college and pro basketball, all needing transponder space to "back haul" the live feed from the event site to the affiliate stations.

While major league baseball began scrambling their backhaul feed using the VCI encryption system years ago, the other big time sports have been slow, for whatever reason, to follow suit. In this respect it's still the "good old days of satellite TV."

How long it will last depends on how successful the encryption system salespeople are.

Cricket anyone?

One thing about this satellite technology that one has to appreciate is the opportunity to be introduced to regional sports we would otherwise never have a chance to experience.

For example, we've all seen regular old bowling, but how about candle pin bowling? Played with pins which are narrow at the top and bottom and wide at the middle and quick-bowled with a holeless ball about the size of a big grapefruit, this is apparently quite the rage in New England. Look for it nights on F4,13 on New England Sports Network (NESN).

One of my favorite sports via satellite is "curling." This is a national passion in Canada. Imagine shuffleboard on ice with massive polished granite rocks with a flat side on the bottom and a handle on top. One participant glides the rock along the court toward a target while assistants furiously scrub a path with special brooms. This is a graceful sport with no apparent age barriers and lots of strategy. Look for curling on the Anik satellites.

Among other oddities is the occasional cricket match, arena football, lacrosse (both college and pro) and Australian rules football



(which seemingly has no rules), just to name a few. Noticeably missing in recent years are the bullfights from Mexico City which were complete with instant replays.

At last count there were some 26 full-time sports channels and at least that many more backhaul channels on any given winter evening. Still not satisfied? Crank up the SCPC receiver and listen to every single college and professional game in North America. They are all up there. Audio backhaul transponders to find SCPC sports include G2,3 and W4,2.

American Home Satellite Association

Last month I briefly mentioned a legal aid package available for home dish owners beset by zoning ordinances. The package was put together by the folks at American Home Satellite Association. Founded in early 1988, AHSA is a member-supported consumer advocacy group which has sought to address a number of the legislative and legal problems which continue to dog the industry.

AHSA's executive director, Court Newton Jr., states that zoning regulations intended to restrict citizens from installing private satellite TV antennas are a "continual problem." One of the big issues this past summer was major league baseball's refusal to allow Americans to watch their favorite teams in action. Says Newton, "[Members were] very heated about sports franchises restricting access to programming." Encouraging legislators in congress to support

legislation favorable to TVRO users is just one item on the AHSA agenda.

Membership in AHSA is \$36 per year and includes the 10 issue per year AHSA newsletter entitled *Sky Report*. Written by a noteworthy staff, this newsletter is crammed with articles on technology, programming, legal affairs and insider industry news. In addition, members have access to free legal advice on zoning and restrictive covenant issues as well as a hot line for members to locate reputable dealers in their area.

For more information on AHSA call them toll free at 800-321-AHSA or write them at 16 Broadway, Suite 400, Valhalla, NY 10595. Find something you think might interest them? FAX it to AHSA at 914-948-6217.

IRAC revisited

In the September column I gave out information on a radio spectrum chart. Here's an update: While it is published by the Interdepartment Radio Advisory Committee of the National Telecommunications and Information Administration in the U.S. Department of Commerce, it is available only through the Government Printing Office.

As my good friend, Edwin E. Dinkle, executive secretary, IRAC, said to me in a form letter: "The NTIA frequency allocation chart entitled "United States Frequency Allocations: The Radio Spectrum" may be purchased by contacting the U.S. Government Printing Office at 202-783-3238. Please reference stock number 003-000-00652-2 when ordering."

The price of the chart is \$2.75 each. This massive multi-colored wall chart is *de rigueur* for every monitoring enthusiast. Don't want to spring for the toll call? Write the GPO, Washington, D.C. 20402. This is the government. It'll take a while.

New solar cells

This story came in on the Xinhua (PRC) newswire via X-Press X-Change on G1,18 VBI: "A British consortium has begun a three-year project to develop a new generation of solar cells . . . (to) be based on indium phosphide, a high radiation resistant material."

The report states that while current silicon based cells degrade to half their performance levels as a result of radiation, the new indium phosphide would degrade to "only 80 to 90 percent." This longer life cell

could result in satellites remaining operational far longer than the current 10-year expectancy.

MAILBAG

Henry Ruh, KB9FO, of Chicago, Illinois, writes: "Here in the Chicago area I can 'view' at least two IntelSat TVRO sources... The video is PAS 625/50, which I can watch in B&W since the TV sets' H/V oscillators can still latch on and lock up despite the frequency differences from NTSC. So far the video has been sports and news, mostly with no audio or subcarrier audio in the 6 to 7 MHz region (varies).

"I am using a 12-foot dish and HTS V TVRO receiver. My 'look angle' is about . . . 45 and 50 degrees east of due south. My neighbor's house blocks anything more easterly from my site. Video is on during evening hours (European time) to about 11 p.m. Central time.

"Pix quality is perfect to 50 percent snow. Apparently they are using different spot beams at different times. Also, lately a lot of F1 signals have gotten weak (lots of sparkles even with a 50 degree LNB). Also, M1 seems to have gotten weaker or they have moved the footprint south as I used to get three channels in the good range and now get only one in the poor to fair range."

Excellent comments, Henry. It's good to see that a 12 foot dish has such good reception in the midwest. To further improve your IntelSat signals I would recommend getting the special IntelSat feedhorn which is made by National ADL. It's not cheap, especially if ordered with the C and Ku band options.

The only drawback to this feedhorn is that there will be a dB or two loss on the right and left hand polarity when combined with the circular polarity. The other option is to use a Teflon dielectric plate which is inserted in the throat of the feedhorn and simulates a circular feed chamber.

As to picture degradation on the various satellites, I would suggest that it's time to peak your dish. The fact that the weakest signals have gotten worse indicates that your dish isn't off by much. My solution is to get your hands on a Bulz-I-Meter and you'll be amazed at the difference. The ADL IntelSat feedhorn and Bulz-I-Meter are available from the Sky Store, St. Hillaire, MN 56754 or call them toll free at 800-328-7733. The dielectric plate is available from Avcom, 500 Southlake Boulevard, Richmond, VA 23236 or call them at 804-794-2500.

Ian Lau, from Troy, Michigan, writes: "Would you please tell me what it takes to receive Armed Forces Radio again. I know, for example, that AFRTS is broadcasting from INMARSAT. But the local satellite dish people know nothing about the satellite since it is not 'entertainment' related. Any advice?"

Good question, Ian. You'll find that a lot of dealers aren't aware of what's happening outside the "cable related" satellites. This is really through no fault of their own, but it always amazes me that they could work in this industry and maintain such a narrow scope.

Here's the situation: Up until a few years ago AFRTS, both audio and video, was available to TVRO through their transponder on F2. Because they frequently rebroadcast certain cable programming, which was VCII encrypted, those programmers forced AFRTS to likewise encrypt. They did, using the Leitch encryption system and AFRTS programming was taken away.

There remains a slim hope for receiving AFRTS via Single Channel Per Carrier audio subcarrier on domestic satellites. If you live far enough west that you can receive Alascom Aurora (143 degrees west) look for AFRTS on transponder 15 and Armed Forces Radio Network (AFRN) on transponder 18.

There is also listed in the latest Westsat Communications Satellite

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Channel Chart, Soldiers Satellite Network. Billed as "U.S. Armed Forces variety entertainment service" this SCPC channel is said to be on W4 transponder 4. Perhaps there are readers who can advise me if there are any I missed. At any rate, you're right about AFRTS and INMARSAT, the trick is to set up for reception.

Electronic Equipment Bank of Vienna, Virginia, had advertised a stand-alone AFRTS reception system was in the works and available shortly. However, prior to filing this column I spoke with Scott at EEB who explained that their proposed AFRTS Receiver System was still a ways from reality.

From *Monitoring Times* reader Rene Matthijssen of Edmonton, Alberta, Canada: "If one of your readers needs technical information about older satellite TV equipment or how to hook it up, I know probably 95 percent of all equipment ever manufactured and put on the market from experience. I can tell whether to snap it up or walk away from it."

Sounds good, Rene; It's good to hear from you and hope many of our readers can take advantage of your knowledge. If you have a question for Rene, write him at 11950 69th Street, Edmonton, Alberta, Canada T5B 1S5. Out of courtesy, how about enclosing something for return postage?

From George Poppin of San Francisco, California, a reprint of a letter from the engineering department at the Voice of Turkey indicates that VOT will be beaming one of its four national TV channels to Europe via satellite.

Patrick Paventa of Hawthorne, New Jersey, communicates his hopes of putting in an SCPC-only TVRO system, the landlord willing. He also says that so far the only World Standard Teletext transmissions are found on the VBI of TBS Superstation. Those with teletext decoders should occasionally monitor other channels for WST transmissions. Most likely will be WGN (G1,3).



The Trashcan Transmitter

"Will you be working in the garbage can today, honey?" Anthony Kord's wife asks as he leaves for his job as station engineer at WWRX radio in Westerly, Rhode Island. Kord winces.

"Even the general manager has been known to ask when I'll next be visiting the canister," he says, a trace of humility hanging thickly in his voice. To these questions Kord is likely to sigh, "the correct title for the WWRX transmitter building is 'overseas shipping crate.'"

When station WWRX went shopping for a new transmitter building, they were shocked by the price tag: at least one firm wanted \$10,000 to build a new cinder block "shack." To make matters worse, they wanted a month in which to complete the project. That's when Kord came up with a better idea.

An overseas shipping crate is a large steel box, eight feet deep, nine feet tall and forty feet wide -- perfect to house the FM station's transmitter. Best of all, a tractor trailer leasing and sales firm in the Providence area could supply one for a modest \$3,500. When compared to similar specs on the concrete block building the station was first considering, the overseas shipping container began to look attractive.

According to Kord, the shipping crate/transmitter building turned out to be an even better deal than he thought. "Although the roof is flat, the inside is corrugated for strength. Mounting most objects to the ceiling is therefore easily accomplished with self-tapping sheet metal screws."

Shipping containers are also air and water tight, designed to protect its cargo from a long overseas journey. "Careful attention was given to cooling," says Kord, who used a cutting torch to make the necessary air intake openings on the shipping container. "Even with 25 kW of generated waste heat," says Kord, "the shipping container is often a few degrees cooler than the outside temperature, even during the summer."

In winter, the clever engineer simply diverts some of the transmitter's heat back into the shack.

There is one drawback to the overseas shipping container cum transmitter building, admits Kord. His is sinking. "The minimal 1-inch sink over the past year on our very soft site was not unexpected," he says, mainly



One man's shipping container is another man's transmitting station.

because the structure's entire weight is resting on six cinderblocks.

How has Kord been able to handle all of the ribbing he obviously receives from family, friends, and co-workers regarding his "trashcan" workplace?

"You eventually learn to smile and take the comments in stride," says Kord. "You know that the overseas shipping crate has saved you time and money, and made your construction job a bit easier."

Bits 'n' Pieces

✓ The FCC has finally unveiled their first proposal for usage of the new expanded AM band. Ten new channels, from 1610 to 1700 kHz, should eventually be allocated to 250 to 300 new full-time stations. Each station would operate with 10 kilowatts during the day and one kilowatt at night in stereo. 1700 kHz will be set aside for Traveler's Information Service stations now using 1610 kHz. Medium-sized towns that were never assigned licenses due to their proximity to larger cities will have priority on the new channels.

The broadcast industry and the public now have their turn to comment on these FCC proposals. Expect to see stations on 1610 and 1620 kHz first. These frequencies are most

desirable since current digital radios can tune them without modification.

✓ ABC Radio Network personality Paul Harvey continues to be America's most popular voice. According to recently released nationwide ratings, Paul's news programs and his feature, *The Rest of the Story*, firmly hold the top five slots. CBS Radio's weekday newscasts at 6 and 7 a.m., and their feature, *The Osgood File*, are right behind, followed by ABC's Information Net newscasts at 6 and 8 a.m., rounding out the top ten.

✓ CBS owned and operated WCAU in Philadelphia has dropped its news-talk format and now simulcasts rock oldies with sister station WOGL-FM. Philadelphia Phillies baseball, Villanova basketball and CBS network coverage of major league baseball and NFL football will continue to be heard on the AM side only.

The station has been the home of controversial talk show hosts such as former Philly mayor Frank Rizzo. CBS claimed, "The station had not been profitable for us for some time. We tried all forms of news and talk, and nothing seemed to work." What a waste of 50,000 watts.

In Boston, the CBS Radio Network has dropped its long-standing affiliation with WEEI in favor of rival WRKO. WEEI was

immediately signed by ABC as a Direction Network affiliate.

Mailbag

✓ "The BBC's new service, Radio 5, is on the air, and it appears to be a catch-all for a variety of programming that won't fit on EBC Radios 1 through 4," says Ron Carruthers in Edinburgh, Scotland. Radio 5 has its own morning magazine shows *Morning Edition* and *Today*, followed by a "really wild" show called *Take Five* where anything goes.

The evenings provide some very eclectic music programs. *Sporting Albums* on Wednesdays interviews famous athletes about their favorite tunes. *The Rave* is a compilation of music, comics, and cults from the new voices of Wales. When all else fails, Radio 5 rebroadcasts the BBC's World Service. "There's no lack of imagination here," says Ron.

✓ Reader Ken Chatterton sends us news about the new *AM Radio Log Book*, published by The National Radio Club. The comprehensive 350 page book lists every AM station in the United States and Canada. Call letters, locations, frequencies, formats, network affiliations, addresses, slogans, and transmitter powers have been meticulously researched and presented in this tome. It's

available for \$19.95 ppd in the U.S. and \$20.95 in Canada from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376.

New Station Grants

Here're the latest stations in our nation, soon to be on the air. Sierra Vista, AZ 101.7; Burney, CA 89.7; Decatur, IL 93.1; Tell City, IN 96.9; Arcadia, LA 92.5; Benton Harbor, MI 94.9; Brooklyn, MI 105.3; East Prairie,

MO 105.3; Southern Pines, NC 102.5; Lebanon, NH 100.5; Winchester, NH 98.7; Homer, NY 101.5; Ada, OH 94.9; Upper Sandusky, OH 90.1; Alva, OK, 89.7; Gregory, TX 104.5; Vinton, VA 106.1; and Spooner, WI 106.3. Courtesy of the *M Street Journal*.

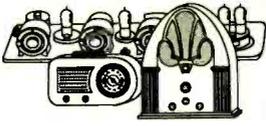
Be an American BandScan Reporter. See any stories about radio in the local paper? Send them to *Monitoring Times*, P.O. Box 98, Brasstown, NC 28902.

For Sale

The owner of a new FM station in the beautiful northern New Mexican mountain region near Taos is looking for a partner and investor. The station will hit the air this month, and is a perfect location for avid skiers and sun worshippers. Call Francis at 505-377-7450.

KJBC, an AM daytimer in Midland, Texas, is available including a business building, a residence and four and a half acres of real estate. Its one kilowatt signal covers the town nicely and has an early sign-on time. Contact

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International Bandscan

As we mentioned before, the BBC has reallocated the frequencies for all its services to accommodate new Radio 5. Radio 1 is now found in stereo between 97 and 99 MHz nationwide. Radio 2 is now exclusively on FM between 88 and 91 MHz. Radio 3 is found from 90 to 93 FM. Radio 4 is the only BBC service still on long wave and can also be found on FM between 92 and 95 MHz. New Radio 5 is available on mediumwave only at 693 and 909 kHz.

In Belgium, BRT has begun a relay of its international service throughout the day on 1512 kHz with 300 kilowatts. Ireland's Atlantic 252 has extended its operating hours and now signs off at 0100 UTC instead of 1800 UTC. Their transmitter power is being reduced to just 100 kilowatts at night to cut back on expenses. At full power, Atlantic 252 boasts a powerful half a megawatt signal heard in North America and Europe.

Credits

Readers Malcolm Kaufman, Ron Carruthers and Ken Chatterton provided information for us this month. Thanks to *Radio World*, *Broadcasting Magazine* and *The M Street Journal* for various data, and the British DX Club for foreign news. Until next month, happy trails.



Andrew Hill of Cheslyn Hay, England, sends two bumper stickers: one from local station BRMB, which plays the latest pop hits, and the other from XTRA-AM, a classic hit station playing songs from the early 60's to the 80's. Both stations broadcast from Birmingham and cover the West Midlands.

P.O. Box 1116
Highland City, FL 33846

And Castro Makes Three?

Manuel Noriega and Daniel Ortega have fallen from power. Is Fidel Castro next? One major Florida business magazine has already published an extensive article on economic opportunities in post-Castro Cuba. Meanwhile we hear rumors that Brigade 2506 which did the fighting in the ill-fated Bay of Pigs invasion is in training again. Certainly there is more optimism in Miami's exile community than one has seen in years.

Anti-Castro broadcasting activity continues to pick up. Diego Medina, chief broadcaster for the Voice of Alpha 66, can be heard nightly except weekends at 2330 on 13760 via WHRI. In a recent broadcast Dr. Medina blasted the Castro regime for failure to follow the path of perestroika.

Thanks to Florida's David Crawford we were able to log another Cuban exile

broadcaster, Radio Cuba Libre, on 7001.5 kHz at 0030 UTC. In past years one or two Cuban clandestines identified with that call. At present it is not clear whether the current Radio Cuba Libre (Radio Free Cuba) is a reactivation of one of these or a brand new station. Regardless of which, it may indicate still more stations could pop up.

In the past the frequencies between about 7040 and 7100 were often a happy hunting ground for Cuban clandestines, some of which made only a couple of broadcasts and others which stuck around for quite some time. It may pay to scan that section of the band from time to time.

Thanks to our hard-working editor Larry Miller and the BBC Monitoring Service, we were able to bring you late breaking news in the September issue that Radio Impacto had returned to the air on mediumwave even if yet silent on shortwave.

With the political climate in Nicaragua and Panama now much more to Impacto's liking, perhaps the station will air anti-Castro broadcasts. If any of our readers are able to monitor its signal on 980 kHz, we would love to know what you are hearing these days.

Free Radio One: We have had several inquiries from persons wanting to know if Free Radio One is currently active. The station attracted quite a lot of attention because its right-wing political views and fundamentalist religious approach made it far more philosophical than most pirates around. Free Radio One also issued a most impressive QSL certificate.

Apparently broadcasts have not been made for a number of months now. Why? It may be simply because the folks responsible for them got tired of doing them, or perhaps they had transmitter problems. However, there may be another reason. Free Radio One was always a strong backer of "Radio Free America" and its host, Tom Valentine. Valentine's point of view is virtually the same as that of Free Radio One. While carried by a number of mediumwave and FM stations, he is also relayed via WWCR Nashville on 7520 kHz at 0200 UTC. Maybe the Free Radio One staff thought WWCR with its 100 kW signal could reach a larger audience than they did.

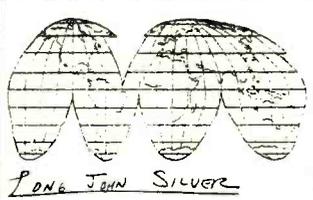
"Outer Limits" Readers

Write: They say that they are hearing quite a lot these days. From Florida Mark Seiden says he bagged his first domestic pirate. It was Hope Radio on 7414.6 at 0100. The gang at Hope Radio claimed to be running 350 watts. Here's "hoping" you come across some more, Mark.

One of our regular reporters, Connecti-

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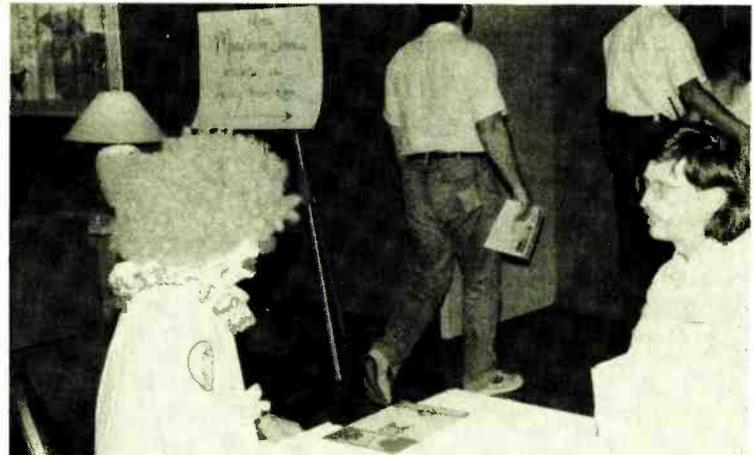
Personal message:
Each of us contributes to the level of happiness in our own part of the world. Please realize that your actions affect others and when you create bad feelings among the people around you, it adds to the sorrows of the world. Little actions in YOUR own sphere of influence can do more to contribute to world peace than all the talk in the world. Be nice to each other, in every way you can. Do not create stress for others, and most of all if you can not control your craziness, at least do not expose it to your children! A little action speaks more loudly than all the yelling in the world; a small kindness is better than the grandest of intentions. Try to control the animal in you, let your spirit shine! Remember; meditation, contemplation and reflection allow us to see the results of our actions, but like all things can be overcome. Philosophy does not do as much to improve life as kindness. Love first, love best, love as if the world depends on it (for it does!) Enough, you probably think I am trying to impose my beliefs on you! I would never try to do so. But if I can assist you in being a little kinder to your loved ones, your kids, your neighbors, then I will gladly remind you that you can be a force for the good. Thanks for taking the time to think about how you can be a better force for the good.

JOHN - APPRECIATE YOUR MENTIONING MY BBS IN YOUR 'OUTER LIMITS' COLUMN!
Thanks, John

"LONG" JOHN SILVER

SAMPLE

Long John Silver of CHGO sent this sample QSL and personal message commemorating the station's final broadcast. CHGO was closed by the FCC.



There were all kinds of clowns at the MT Convention! Actually, MT shared the hotel with a Shriner convention, many of whom were also interested in radio, as was this one, talking with Radio NewYork International's Alan Weiner at the IRCA booth.

cut's Jim Kalach, also came across Hope Radio International. He found them in a QSO with KNBS, Samurai Radio and Radio Happy Isle. These pirate QSOs appear to be turning up with increasing regularity in recent months.

Michigan's Bill Lauterbach checks in again with several nice logs. He heard the Revolutionary Voice of Plainville at 0015 on 7412 kHz. CFCN, claiming to be a Canadian pirate, came in at 0120 on 7416, while Rockabilly Radio put in a SSB signal on 7412 at 0130. Some nice catches, Bill.

Meanwhile in Illinois Tim Johnson has been catching his share. He found WKND at 2340 on 7415 with an "Elmer Fudd rap song." WKZP (K-Zap) also checked in on 7415 at 0010 with the theme from "The Munsters" TV show. Tim also had logs of Hope Radio on 7370 and Samurai Radio on 7415.

Virginia's Pat Murphy continues to have a good deal of monitoring success. Action Radio came in with an excellent signal on 7415 at 0148.

Radio ESP was found on 7415 at 0313 with Janis Joplin tunes. In USB on 7415 Pat heard Fourth of July Radio at 0346. For good measure Pat found CFCN (or CFBN) on 7420 at 0207.

Once again Alan Masyga has had good hunting up Minnesota way. He got WNTZ at 0135. Alan also heard an unidentified on 15036 at 2235.

Here and There: A relic of the Vietnam War: a French language program of Radio-TV National Laos can be heard via a USSR relay from 1100 to 1130 on 17595. With the changes in Moscow and elsewhere this may be gone one of these days. Meanwhile if you cannot hear Laos direct, you might find this an interesting catch.

According to the BBC Monitoring Service, groups opposing the government of Ethiopia are quite active with clandestine transmissions these days. Among them EDORM, the Ethiopian Democratic Officers' Revolutionary Movement, has announced broadcasts at 0500 and 1930 in the 48, 44, 43, 41, 40 and 31 meter bands. Voice of the Broad Oromo Masses is on at 0400 and 1500 in the same bands. It has been monitored on 9316 and 7886 at 0400. These frequencies are also used by the Voice of the Ethiopian People for Peace, Democracy and Freedom and by the Voice of the Tigray Revolution. Other frequencies worth trying are 9335, 7905 and 7820. The Ethiopian clans are difficult, but who knows what you might hear.

Feeling Left Out?

Have your favorite communications (Police, Fire, etc) moved to the 800MHz band? Are the scanners available which access this band too expensive? If you are like many scanning enthusiasts, this can be a real dilemma. For those of you who are still in a futile search for 800 MHz coverage on your hand held scanning radio, GRE America, Inc. has a product for you. Introducing the newly developed **Super Converter™ II** which has all of the features that you have come to enjoy in our

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From one of the country's leading experts on international terrorism, Frank McGuire, comes a Foreign Broadcast Information Service (CIA) report that the leftist guerrillas in El Salvador recently demanded that the government stop jamming their Radio Venceremos and Radio Farabundo Marti broadcasts. That jamming has often been reported by shortwave monitors and has even included a black version of Radio Venceremos. American assistance has often been suspected.

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You Can Take it with You

As I have mentioned several times in the past, it is worthwhile to take a portable longwave receiver with you when you go on a trip. Ken Stryker went to Europe last summer and took his Sony 7010 along. The loggings, below, show what he heard while in Wuerzburg, West Germany, and in the Swiss Alps.

292	NKR	Neckar (Heidelberg), W. Germany
295	NB	Nurnberg, W. Germany
303	RTT	Rattenburg, Austria
306	SG	Stuttgart, W. Germany
308.5	WOF	Munich, W. Germany
311	NSN	Niederstein, W. Germany 2DAID
320	FFM	Frankfurt Main, W. Germany
325	KTG	Kitzingen (AAF), W. Germany
327	LNZ	Linz, Austria
331	MUN	Munich, W. Germany
338	RUD	Rudersheim, W. Germany
355	KNG	Koning, W. Germany
357.5	KG	Sarajevo, Yugoslavia
360	WAL	Wallisellen, Switzerland
362	BZO	Bolzano, Italy
363	SCF	Schweinfurt (APH), W. Germany
366	WS	QTH?
370	GAC	Gacko, Yugoslavia
370	PSA	Spessart, W. Germany
371.5	SHA	Schaffhausen, Switzerland
375	NDG	Nordlingen, W. Germany
378	MC	Munich, W. Germany
382	FW	Frankfurt Main, W. Germany
382	SBG	Salzburg, Austria
390	VAL	Valjevo, Yugoslavia
395	TRA	Trasadingen, Switzerland
398	FTT	Feucht (AFF), W. Germany
403	HAB	Hammelburg, W. Germany
413	KTI	Kuhtai, Austria
415	RTB	Rothembach (Nurnberg), W. Germany
420	INN	Innsbruck, Austria
426	GBG	Gleichenberg
426.5	MIQ	Inglstadt (Mike) W. Germany
441	FDA	Fulda (AAF), W. Germany
446	HNU	Hanau (AAF), W. Germany
452	ANS	Ansbach (AHP) W. Germany
470	FY	Finthen (AAF), W. Germany
473	FHA	Friedrichshafen, W. Germany
473	BU	QTH?
475	WT	Wertheim (AHP), W. Germany
482	SWH	Schwabisch Hall (AHP), W. Germany
488	ILM	Illesheim (AAF), W. Germany
507	GBL	Gleibelstadt (AAF), W. Germany
514	DZ	Mlada Boleslav, Czechoslovakia

Note that the frequencies start at 292 kHz and extend through the 400s into the low 500s. Those of you who listen to longwave broadcast stations from Europe and Africa will recognize that the beacons are generally above the broadcast station frequencies. Thus, you don't find any in the lower 200 kHz bands and do find them higher.

Next, notice the use of .5 frequencies. This permits more beacons without duplicating the frequency. In the U.S. we frequently find a number of beacons on the same frequency. Hopefully, they are far enough apart to prevent overlap. But, try listening on a crisp, cold night and you may be able to hear quite a few together. A loop antenna helps to separate them.

The AAF stands for Army Air Field and the AHP stands for Army Helicopter Pad or Port. These are military installations, including both U.S. and West German facilities.

What's That?

Bob Hurley writes to say that he heard UQN/372 on a couple of occasions and couldn't find it in *The Aero-Marine Beacon Guide*. The reason is that it is a more recent change. UQN/372 is Vidalia, Georgia. It used to send an ID of VDI. It is part of the free *Updater* sent to buyers of the *Aero-Marine Beacon Guide*. If you bought the 1990 edition of the *Guide* and haven't sent for your *Updater*, be sure to send your SASE to the address below.

If you haven't purchased the *Guide*, you can order now and receive both the *Guide* and the *Updater*. You'll be just as up-to-date as everyone else. You can order *The Aero-Marine Beacon Guide* and the *Updater* by sending \$15 to:

Ken Stryker
2856-G W. Touhy Avenue
Chicago, IL 60645

You will get a listing of over 7,000 beacons, including frequency, ID, location, airport, operating agency such as army, private, FAA etc. There is information on coordinates, power, elevation at transmitter sight and modulation shift.

Included is a listing of active lowfers (amateurs operating beacons on 1750 meters) and the GWEN stations. There are articles on propagation and sending for QSLs. The beacons are listed by ID within frequency and there is a cross index of frequencies within IDs. If you listen to beacons, this quickly becomes your most valuable aid.

Old Beacons Never Die, or Do They?

As I have commented before, all too many beacons pass into oblivion quietly, without any report of their demise. Sometimes a beacon will be silent for several years and then suddenly reappear with their signal on the same old frequency. For this reason, we are usually hesitant about writing a beacon off too soon.

There was one instance several years ago of a beacon at a private airfield in Virginia that was no longer being heard. DXers in the area continued to check just in case it might be on at odd or usual hours. Finally, one listener spotted an item in the business section of the newspaper. The airport was closed and the land had been sold to be developed into another shopping mall. It was quite safe to remove this beacon from the list.

Here are some more that have been listed as decommissioned in various documents and reports. CCO/210 in Newman, Georgia, and HLW/265 in Hattiesburg, Mississippi, are gone. A couple of Texas beacons are no longer: They are MXJ/281 Conroe and MIH/375 Brownsville. Among the others that have been closed are FMM/338 Fort Morgan, Colorado; GFG/378 Leesburg, Virginia; TVB/383 Cabool, Missouri; and FJM/414 Framingham,

Massachusetts. Sometimes, a new beacon will appear on a different frequency and ID for that airport at some later date, but these particular beacons are permanently gone.

For a number of years, the Great Lakes Coast Guard units have maintained quite a few remote lights that also have beacons. These have created problems because of difficult access to their remote locations. Now they have developed solar powered units that will provide power for the lights. However, there is not enough power to also keep the beacons going.

The decision has been made to do away with the beacons and keep the lights using solar power. Some of the beacons that have been eliminated are M/298 Manitou Island, Michigan; X/305 Passage Island, Michigan; X/315 Grays Reef, Michigan; and O/317 Devils Island, Wisconsin. There will likely be others in the future if these work out successfully. I don't know if the closing of G/294 Mississippi River Outlet, Louisiana, is for the same reason or another.

Correction

A couple of months ago I mentioned the test by MP/Montauk Point on 293 kHz. Yes, 293 is the correct frequency as shown on the loggings rather than the incorrect frequency listed in the test. I have a spell checker on my word processor that helps me avoid spelling errors, but it can't do much when I write the wrong number down. It now appears that the test is going to be for a longer period of time, perhaps as long as a year.

Meanwhile, ME/350 in Chicago has returned to the air with both voice and code ID. I still don't know whether this was a test of turning it off or a malfunction of some type that took a long while to repair.

Apologies

I was very sorry to miss the convention in Knoxville. I had been looking forward to meeting a lot of you people for some time. It was a bitter disappointment.

The following is offered not as any appeal for sympathy but rather to simply explain the sequence of events that occurred. Last month's column covered the beacons I heard down in Ecuador. About a week after I came back I was felled by a pinched nerve in the back. It was followed an allergy to the medication that was being used for my pinched nerve.

After that began to clear up, the real villain emerged. The beginning of August I was taken to the hospital with a breathing problem. The tests concluded that I had lung cancer at an advanced stage. I quit smoking several years ago, but apparently not soon enough. Or maybe it wouldn't have made any difference anyhow. Now we pick up the pieces and go on from here with some adjustments in personal activities.



MT Program Team

Kannon Shanmugam, Program Manager

4412 Turnberry Circle
Lawrence, KS 66047

John Carson

Norman, Oklahoma

Jim Frimmel

Willow Park, Texas

program

guide

Sunday

Nov 4th, 11th, 18th, 25th

- 0000 KSDA, Guam: Your Story Hour. Dramatized children's stories.
- 0008 Radio Canada Int'l: Innovation Canada. Bob Cadman looks at Canada's new ideas and technological developments.
- 0010 Kol Israel: Spotlight. A weekly news magazine.
- 0030 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
- 0030 KSDA, Guam: Voice of Prophecy. H.M. Richards' devotional program.
- 0037 Radio Netherlands: Newslines. News analysis from correspondents worldwide.
- 0038 Radio Canada Int'l: The Shortwave Listeners' Digest. Ian McFarland with DX news and features.
- 0052 Radio Netherlands: Over to You. Listener letters and questions, and music selections.
- 0100 Radio Norway Int'l: Norway Today. A magazine program on issues and people affecting modern-day Norway.
- 0101 BBC: Play of the Week. Hour-long drama selections.
- 0108 Radio Canada Int'l: Spotlight on Science. Bob Cadman examines the latest developments in science and technology.
- 0109 Deutsche Welle: Commentary. Opinion on current issues.
- 0110 Kol Israel: Spotlight. See S 0010.
- 0117 Deutsche Welle: Feature. "Mailbag," "Phone-in," or "To The Top" (the German pop scene), presented on a rotating basis.
- 0130 Radio Canada Int'l: Earth Watch. Andre Courey looks at environmental issues.
- 0134 Deutsche Welle: German by Radio. An advanced German language course for English speakers.
- 0138 Radio Canada Int'l (Latin America): Listeners' Corner. Listener comments, questions, and music requests.
- 0138 Radio Canada Int'l (USA): Coast to Coast. Ian McFarland looks at opinions of Canadians on issues affecting them.
- 0200 KSDA, Guam: AWR Magazine. Stories about science, nature, discoveries, nutrition, and health matters.
- 0200 Radio Norway Int'l: Norway Today. See S 0100.
- 0209 BBC: British Press Review. Editorial opinion in the British press.
- 0209 Deutsche Welle: Commentary. See S 0109.
- 0210 Kol Israel: Spotlight. See S 0010.
- 0213 Deutsche Welle: Sports Report. The latest news from the world of sports.
- 0215 BBC: Talk. A short discussion on various topics (except November 4th: Talking From..., talks with leading figures throughout the UK).
- 0219 Deutsche Welle: Mailbag Asia. Answers to listeners' queries, musical requests, and the club corner.
- 0230 BBC: Feature. More topical programming on various subjects.
- 0230 KSDA, Guam: DX Asiawaves. News from the world of shortwave radio.
- 0245 KSDA, Guam: Probe. A Bible study program.
- 0309 Deutsche Welle: Commentary. See S 0109.
- 0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
- 0317 Deutsche Welle: Feature. See S 0117.
- 0330 BBC: My Music. The return of the popular musical quiz, hosted by Steve Race.
- 0334 Deutsche Welle: German by Radio. See S 0134.
- 0337 Radio Netherlands: Newslines. See S 0037.
- 0352 Radio Netherlands: Over to You. See S 0052.
- 0404 Radio Canada Int'l: Double Exposure. A mocking look at the week's top news stories and newsmakers.
- 0409 Deutsche Welle: Commentary. See S 0109.
- 0413 Deutsche Welle: Sports Report. See S 0213.
- 0419 Deutsche Welle: International Talking Point. A round-table discussion on major trends and events.
- 0430 BBC: Musical Feature. Music programming of a topical nature.
- 0434 Deutsche Welle: People and Places. A program for Africa with interviews, stories, and music.
- 0434 Radio Canada Int'l: Listeners' Corner. See S 0138.

- 0445 BBC: Personal View. A personal opinion on topical issues in British life.
- 0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
- 0509 Deutsche Welle: Commentary. See S 0109.
- 0517 Deutsche Welle: Feature. See S 0117.
- 0530 BBC: Financial Review. A look back at the financial week.
- 0534 Deutsche Welle: German by Radio. See S 0134.
- 0540 BBC: Words of Faith. People share how their scripture gives meaning to their lives.
- 0545 BBC: Letter from America. Alistair Cooke's distinctly British view of America.
- 0609 Deutsche Welle: Commentary. See S 0109.
- 0613 Deutsche Welle: Sports Report. See S 0213.
- 0619 Deutsche Welle: International Talking Point. See S 0419.
- 0630 BBC: Jazz for the Asking. A jazz music request show.
- 0634 Deutsche Welle: People and Places. See S 0434.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: From Our Own Correspondent. See S 0315.
- 0730 Radio Netherlands: Happy Station. Tom Meyer's family entertainment program with music and letters.



Do you have special QSL's, penants, or logos from radio stations? Send them to us and we'll use them as space permits; We'll copy them and return them to you within the month. Send to: QSL's, c/o Monitoring Times, P.O. Box 98, Brasstown, NC 28902.

legend

- * The first four digits of an entry are the program start time in UTC.
- * The time is followed by the station name, program name, and a brief summary of the program's content.
- * Some listings may be followed by "See X 0000." The letter stands for a day of the week:

S=Sunday M=Monday
T=Tuesday W=Wednesday
H=Thursday F=Friday
A=Saturday

The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

- * All days are in UTC. Remember that if you are listening in North American prime time, it is actually the next morning UTC.

For example, if you are listening to a program at 8:01 pm [EDT] on your Thursday night, that's equal to 0001 UTC and therefore Friday morning UTC.

- * We suggest that you tune in to a program a few minutes before the

schedule start time, as some stations have tentative schedules which may slightly vary. Consult the frequency section beginning on page 65 for the frequencies in use by that station at that time.

newslines is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets enclosing the day codes.

We invite listeners and stations to send program information to the program manager at the address above.

program

guide



The Yiddish department at Kol Israel is in the hands of Anka Shamir.

- 0745 BBC: Book Choice. Short reviews of current or future best-sellers.
- 0750 BBC: Waveguide. How to hear the BBC better.
- 1109 Deutsche Welle: Arts on the Air. Reports and interviews on major cultural events and developments.
- 1110 Kol Israel: Mainstream. A look at consumer and community affairs.
- 1115 BBC: From Our Own Correspondent. See S 0315.
- 1130 BBC: The Ken Bruce Show. See S 0030.
- 1130 Radio Netherlands: Happy Station. See S 0730.
- 1134 Deutsche Welle: German by Radio. See S 0134.
- 1200 Radio Norway Int'l: Norway Today. See S 0100.
- 1201 BBC: Play of the Week. See S 0101.
- 1300 Radio Norway Int'l: Norway Today. See S 0100.
- 1308 Radio Canada Int'l: Listeners' Corner. See S 0138.
- 1345 BBC: Sports Roundup. The day's sports news.
- 1401 BBC: Feature. Topical programming on various subjects.
- 1404 Radio Canada Int'l: Sunday Morning. A magazine program covering virtually everything under the sun.

- 1430 BBC: Anything Goes. Bob Holness presents a variety of odd recordings.
- 1430 Radio Netherlands: Happy Station. See S 0730.
- 1509 Deutsche Welle: Religion and Society. A roundup of news and developments concerning the world's major religions.
- 1513 Deutsche Welle: Africa in the German Press. A look at what German papers and weeklies have to say about Africa.
- 1515 BBC: Concert Hall. Recordings of classical music selections.
- 1523 Radio Canada Int'l: (Europe) Current Affairs. An in-depth look at the news.
- 1534 Deutsche Welle: Pop from Germany. A look at the German pop music scene.
- 1600 KSDA, Guam: AWR Magazine. See S 0200.
- 1600 Radio Norway Int'l: Norway Today. See S 0100.
- 1609 Deutsche Welle: Arts on the Air. See S 1109.
- 1615 BBC: Feature. See S 0230.
- 1630 KSDA, Guam: Power to Cope. Advice for coping with life's problems.
- 1630 Radio Netherlands: Happy Station. See S 0730.
- 1634 Deutsche Welle: German by Radio. See S 0134.
- 1645 BBC: Letter from America. See S 0545.
- 2300 Kol Israel: Hebrew Lessons. Hebrew language lessons for English speakers.
- 2300 KSDA, Guam: Family Matters. Advice for dealing with family life in today's culture.
- 2305 BBC: Words of Faith. See S 0540.
- 2308 Radio Canada Int'l: The Shortwave Listeners' Digest. See S 0038.
- 2310 BBC: Book Choice. See S 0745.
- 2315 BBC: Letter from America. See S 0545.
- 2315 KSDA, Guam: Bible in Living Sound. Dramatized Bible stories.
- 2330 BBC: Feature. See S 1401.
- 2330 KSDA, Guam: Voice of Prophecy. See S 0030.

- 2315.
- 0025 Kol Israel: DX Corner. Ben Dalfen presents DX news.
- 0030 BBC: In Praise of God. A half-hour program of worship.
- 0030 KSDA, Guam: Greatest Story Ever Told. See M 0030.
- 0030 Radio Netherlands: Happy Station. See S 0730.
- 0034 Radio Canada Int'l: Double Exposure. See S 0404.
- 0045 KSDA, Guam: Voice of Prophecy. See S 0030.
- 0100 Radio Norway Int'l: Norway Today. See S 0100.
- 0101 BBC: Feature. Programming on various subjects.
- 0108 Radio Canada Int'l (Latin America): L'Attitude. The arts scene in Canada.
- 0108 Radio Canada Int'l (USA): Listeners' Corner. See S 0138.
- 0109 Deutsche Welle: Commentary. See S 0109.
- 0110 Kol Israel: This Land. Jackle Beecham presents a travel magazine.
- 0116 Deutsche Welle: Living in Germany. A weekly look at the social scene in Germany.
- 0134 Deutsche Welle: Larry's Random Selection. Larry Wayne takes a look at Germany from the lighter side.
- 0134 Radio Canada Int'l (Latin America): Coast to Coast. See S 0138.
- 0134 Radio Canada Int'l (USA): L'Attitude. See M 0108.
- 014* BBC: Musical Feature. Musical programming of a topical nature.
- 0200 Radio Norway Int'l: Norway Today. See S 0100.
- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: European Journal. A review of major events in Europe, with interviews and analyses.
- 0210 Kol Israel: Calling All Listeners. See M 0010.
- 0215 BBC: Andy Kershaw's World of Music. Exotic and innovative music from the world over.
- 0230 BBC: Science in Action. The latest in scientific developments.
- 0234 Deutsche Welle: Science and Technology. New scientific and technological developments.
- 0309 Deutsche Welle: Commentary. See S 0109.
- 0315 BBC: Good Books. A recommendation of a book to read.
- 0316 Deutsche Welle: Living in Germany. See M 0116.
- 0330 BBC: Anything Goes. See S 1430.

Monday

Nov 5th, 12th, 19th, 26th

- 0000 KSDA, Guam: Family Matters. See S 2300.
- 0004 Radio Canada Int'l: Royal Canadian Air Farce. A humorous look at the land up north.
- 0010 Kol Israel: Calling All Listeners. A mailbag program.
- 0015 KSDA, Guam: Bible in Living Sound. See S

newslines

- 0000 BBC: Newsdesk
- 0000 Christian Science Monitor: News
- 0000 Kol Israel: News
- 0000 Radio Australia: International Report
- 0000 Radio Beijing: News
- 0000 Radio Canada Int'l: News [S-M]; World at 6 [T-A]
- 0000 Radio Finland: Northern Report [T-A]
- 0000 Radio Havana Cuba: News [T-S]
- 0000 Radio Kiev: News
- 0000 Radio Korea: News
- 0000 Radio Luxembourg: News
- 0000 Radio Moscow: News
- 0000 Radio New Zealand Int'l: News [M-A]
- 0000 Radio Prague Int'l: News
- 0000 Radio Sofia: News
- 0000 Spanish Foreign Radio: News
- 0000 Voice of America: News
- 0000 WWCR: USA Radio News [T-A]
- 0005 Radio Pyongyang: News
- 0010 Radio Beijing: News About China
- 0030 BRT, Brussels: News [T-A]
- 0030 Christian Science Monitor (Asia): News [M]
- 0030 Christian Science Monitor: News [T-F]
- 0030 HCJB: Latin American News
- 0030 Radio Budapest: News [T-S]

- 0030 Radio Canada Int'l: News [S-M]
- 0030 Radio Havana Cuba: Newsbreak [T-S]
- 0030 Radio Jamahiriya, Libya: News
- 0030 Radio Moscow (World Service): News in Brief
- 0030 Radio Netherlands: News [T-S]
- 0030 Voice of America (Americas, East Asia): News (Special English) [T-S]
- 0030 Voice of America (E.Asia): News (Spec Eng) [M]
- 0045 Radio Berlin Int'l: News
- 0045 Radio Korea (World News Service): News
- 0051 Spanish Foreign Radio: News Summary [S]
- 0055 KUSW: News [T-S]
- 0055 WRNO: ABC News [H, A]
- 0100 BBC: News Summary
- 0100 Christian Science Monitor: News
- 0100 Deutsche Welle: World News
- 0100 Kol Israel: News
- 0100 Radio Australia: World and Australian News
- 0100 Radio Canada Int'l: News [S-M]
- 0100 Radio Havana Cuba: News [T-S]
- 0100 Radio Japan: News
- 0100 Radio Luxembourg: News
- 0100 Radio Moscow: News
- 0100 Radio New Zealand Int'l: News [M-F]
- 0100 Radio Prague Int'l: News
- 0100 Radio Yugoslavia: News
- 0100 Radiotelevisione Italiana: News

- 0100 RAE, Buenos Aires: News [T-A]
- 0100 Spanish Foreign Radio: News
- 0100 Voice of America: News
- 0100 WWCR: USA Radio News [T-S]
- 0115 Radio Havana Cuba: Cuban Nat'l News [T-S]
- 0125 HCJB: World News
- 0130 Christian Science Monitor (Asia): News [M]
- 0130 Christian Science Monitor: News [T-F]
- 0130 Radio Austria Int'l: News
- 0130 Radio Budapest: News
- 0130 Radio Havana Cuba: Newsbreak [T-S]
- 0130 Radio Moscow (World Service): News in Brief
- 0130 Voice of Greece: News [M-A]
- 0151 Spanish Foreign Radio: News Summary [S]
- 0155 KUSW: News [T-S]
- 0155 WRNO: ABC News [W, A]
- 0200 BBC: World News
- 0200 Christian Science Monitor: News
- 0200 Deutsche Welle: World News
- 0200 Kol Israel: News
- 0200 Radio Australia: International Report
- 0200 Radio Bras, Brasilia: News [T-S]
- 0200 Radio Canada Int'l: The World at Six [T-A]
- 0200 Radio Havana Cuba: News [T-S]
- 0200 Radio Luxembourg: News
- 0200 Radio Moscow: News
- 0200 Radio New Zealand Int'l: News [M-F]

program

guide

- 0330 Radio Netherlands: Happy Station. See S 0730.
- 0334 Deutsche Welle: Larry's Random Selection. See M 0134.
- 0408 Radio Canada Int'l: Innovation Canada. See S 0008.
- 0409 Deutsche Welle: European Journal. See M 0209.
- 0430 BBC: Off the Shelf. A reading selected from the best of world literature.
- 0434 Deutsche Welle: Africa Report. Reports and background to the news from correspondents.
- 0434 Radio Canada Int'l: Spotlight on Science. See S 0108.
- 0445 BBC: Feature. Topical programming on various subjects.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: Commentary. See S 0109.
- 0516 Deutsche Welle: Living in Germany. See M 0116.
- 0530 BBC: Waveguide. See S 0750.
- 0534 Deutsche Welle: Larry's Random Selection. See M 0134.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
- 0609 Deutsche Welle: European Journal. See M 0209.
- 0630 BBC: Feature. See S 1401.
- 0630 Radio Canada Int'l: Inside Track. A sports feature magazine.
- 0634 Deutsche Welle: Africa Report. See M 0434.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: Feature. See S 0230.
- 0737 Radio Netherlands: Newslines. See S 0037.
- 0752 Radio Netherlands: The Research File. A science and technology review, covering the latest discoveries and developments.
- 1109 Deutsche Welle: Newslines Cologne. A current affairs program with worldwide reports and a German press review.
- 1110 Kol Israel: Israel Mosaic. A weekly magazine on life in Israel.
- 1115 BBC: Health Matters. New developments in the world of medical science and fitness.
- 1130 BBC: Composer of the Month. A month-long series on a particular classical music composer.
- 1134 Deutsche Welle: Hello Africa. Musical requests and greetings to friends.
- 1137 Radio Netherlands: Newslines. See S 0037.
- 1152 Radio Netherlands: The Research File. See M 0752.
- 1215 BBC: Quiz. A topical game show.

the program file

november 1990

MUSINGS: As the winter shortwave listening season begins in earnest, some random thoughts... Kol Israel recently started Hebrew lessons on Sundays, Wednesdays, and Fridays at 2300 UTC... Boy, I wish CNN had a shortwave service. There's no station with worldwide coverage that provides baseball scores!... Is it just me, or does the BBC seem to be manipulating their schedule to fit in another "Newshour" at 1300 UTC?... I don't know about you, but I think that Oliver Scott of "Newshour" is the best news broadcaster on the shortwaves today... On the same topic, "Newshour" is great, but the BBC's 1300 UTC "News and Twenty-Four Hours on Sunday" is better... Rumbblings that the BBC might split into two

networks -- BBC 1 for news, BBC 2 for other programming -- continue unabated... Radio Australia will soon be starting up a mailbag program... Thanks to all of you who have sent in letters and contributions over the past few months; your help is really appreciated.

RADIO NEW YORK INT'L INFORMATION: At last report, Radio New York International is still being heard via WWCR on Mondays at 0100-0500 UTC.

Most of the programs previously heard on WWCR in that time slot can be heard at different times later in the week.

-- Kannon Shanmugam
Program Manager

- 0200 Radio Romania Int'l: News
- 0200 Swiss Radio Int'l: News
- 0200 Voice of America: News
- 0200 Voice of Free China: News
- 0200 WWCR: USA Radio News [T-A]
- 0215 Radio Cairo: News
- 0230 Christian Science Monitor(Af,Eur):News[M]
- 0230 Christian Science Monitor: News [T-F]
- 0230 HCJB: Latin American News
- 0230 Radio Havana Cuba: Newsbreak [T-S]
- 0230 Radio Moscow (World Service): News in Brief
- 0230 Radio Portugal: News [T-A]
- 0230 Radio Tirana, Albania: News
- 0245 Radio Berlin Int'l: News
- 0245 Radio for Peace Int'l: UN Radio News [T-A]
- 0245 Radio Korea (World News Service): News
- 0255 KUSW: News [T-S]
- 0300 BBC: World News
- 0300 Christian Science Monitor: News
- 0300 Deutsche Welle: World News
- 0300 Radio Australia: World and Australian News
- 0300 Radio Beijing: News
- 0300 Radio Havana Cuba: News [T-S]
- 0300 Radio Japan: News
- 0300 Radio Moscow: News
- 0300 Radio New Zealand Int'l: News [M-F]
- 0300 Radio Prague Int'l: News

- 0300 Voice of America: News
- 0300 Voice of Free China: News
- 0300 WWCR: USA Radio News [T-S]
- 0309 BBC: News About Britain
- 0310 Radio Beijing: News About China
- 0315 Radio Cairo: News
- 0315 Radio France Int'l: News
- 0315 Radio Havana Cuba: Cuban Nat'l News [T-S]
- 0325 HCJB: World News
- 0330 Christian Science Monitor(Af,Eur):News[M]
- 0330 Christian Science Monitor: News [T-F]
- 0330 Radio Havana Cuba: Newsbreak [T-S]
- 0330 Radio Moscow (World Service): News in Brief
- 0330 Radio Netherlands: News [T-S]
- 0330 Radio Tirana, Albania: News
- 0330 UAE Radio, Dubai: News
- 0340 Voice of Greece: News [M-A]
- 0350 Radio Yerevan: News
- 0350 Radiotelevisione Italiana: News
- 0355 KUSW: News [T-S]
- 0355 Radio Japan: News [M-F]
- 0400 BBC: Newsdesk
- 0400 Christian Science Monitor: News
- 0400 Deutsche Welle: World News
- 0400 Radio Australia: International Report
- 0400 Radio Beijing: News
- 0400 Radio Berlin Int'l: News

- special relevance for Africa.
- 1600 KSDA, Guam: Family Matters. See S 2300.
- 1609 Deutsche Welle: Newslines Cologne. See M 1109.
- 1615 BBC: Good Books. See M 0315.
- 1615 KSDA, Guam: Bible In Living Sound. See S 2315.
- 1630 BBC: Health Matters. See M 1115.
- 1630 KSDA, Guam: Greatest Story Ever Told. See M 0030.
- 1634 Deutsche Welle: Asia-Pacific Report. Correspondents' reports, interviews, and background news from the Asia-Pacific region.
- 1637 Radio Netherlands: Newslines. See S 0037.
- 1645 BBC: The World Today. News analysis on a selected location or event in the news.
- 1645 KSDA, Guam: Voice of Prophecy. See S 0030.
- 1652 Radio Netherlands: The Research File. See M 0752.
- 2300 KSDA, Guam: Family Matters. See S 2300.
- 2305 BBC: Commentary. Background to the news from a wide range of specialists.

- 0400 Radio Canada Int'l: News
- 0400 Radio Havana Cuba: News [T-S]
- 0400 Radio Moscow: News
- 0400 Radio New Zealand Int'l: News [M-F]
- 0400 Radio Prague Int'l: News
- 0400 Radio Romania Int'l: News
- 0400 Radio RSA: News
- 0400 Radio Sofia: News
- 0400 Swiss Radio Int'l: News
- 0400 Voice of America: News
- 0400 Voice of Turkey: News
- 0400 WRNO: ABC News [F]
- 0400 WWCR: USA Radio News [M-A]
- 0405 Radio New Zealand Int'l: NZ News [M-F]
- 0405 Radio Pyongyang: News
- 0410 Radio Beijing: News About China
- 0425 Radiotelevisione Italiana: News
- 0430 Christian Science Monitor(Af,Eur,NE Asia):(M)
- 0430 Christian Science Monitor: News [T-F]
- 0430 Radio Canada Int'l: News [T-A]
- 0430 Radio Havana Cuba: Newsbreak [T-S]
- 0430 Radio Moscow (World Service): News in Brief
- 0430 Radio Tirana, Albania: News
- 0445 Radio Berlin Int'l: News
- 0455 KUSW: News [T-S]
- 0455 WYFR (Network): News [T-A]
- 0500 BBC: World News

program

guide

- 2308 Radio Canada Int'l: Current Affairs. See S 1523.
- 2310 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.
- 2315 BBC: Poems by Post. Michael Rosen presents your poetry requests.
- 2315 KSDA, Guam: Bible in Living Sound. See S 2315.
- 2330 BBC: Multitrack 1: Top 20. Tim Smith presents what's hot on the British pop music charts.
- 2330 KSDA, Guam: Voice of Prophecy. See S 0030.

Tuesday

Nov 6th, 13th, 20th, 27th

- 0000 KSDA, Guam: Family Matters. See S 2300.
- 0010 Kol Israel: Spectrum. Science and technology in Israel.
- 0015 KSDA, Guam: Bible in Living Sound. See S 2315.
- 0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
- 0030 KSDA, Guam: Greatest Story Ever Told. See M 0030.
- 0030 Radio Canada Int'l: As It Happens. A detailed look at the people and events making news in Canada and abroad.
- 0037 Radio Netherlands: Newslines. See S 0037.
- 0045 KSDA, Guam: Voice of Prophecy. See S 0030.
- 0052 Radio Netherlands: The Research File. See M 0752.
- 0101 BBC: Outlook. See M 1405.
- 0109 Deutsche Welle: European Journal. See M 0209.
- 0110 Kol Israel: Calling All Listeners. See M 0010.
- 0125 BBC: Financial News. See M 2310.
- 0130 BBC: Short Story. Brief tales written by BBC listeners.
- 0134 Deutsche Welle: Transatlantic Diary. Cultural, science, and economic developments between the U.S. and Germany.
- 0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other parts of the world.
- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: European Journal. See M 0209.

- 0210 Kol Israel: Spectrum. See T 0010.
- 0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
- 0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
- 0230 Radio Canada Int'l: As It Happens. See T 0030.



Ki-Woong is an announcer for KSDA whose broadcasts are directed to Korean listeners.

- 0234 Deutsche Welle: Man and Environment. A program on all topics relating to the environment in industrial and developing countries.
- 0309 Deutsche Welle: European Journal. See M 0209.
- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
- 0334 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0337 Radio Netherlands: Newslines. See S 0037.

- 0352 Radio Netherlands: The Research File. See M 0752.
- 0408 Radio Canada Int'l: As It Happens. See T 0030.
- 0409 Deutsche Welle: European Journal. See M 0209.
- 0430 BBC: Off the Shelf. See M 0430.
- 0434 Deutsche Welle: Africa Report. See M 0434.
- 0438 Radio Canada Int'l: Current Affairs. See S 1523.
- 0445 BBC: New Ideas. A radio shop window for new products and inventions.
- 0455 BBC: Book Choice. See S 0745.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: European Journal. See M 0209.
- 0530 BBC: Financial News. See M 2310.
- 0534 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0609 Deutsche Welle: European Journal. See M 0209.
- 0630 BBC: Rock Salad. Tommy Vance presents heavy metal music. Rock on, dudes!
- 0630 Radio Canada Int'l: The Food Show. An audio cornucopia for the gourmet.
- 0634 Deutsche Welle: Africa Report. See M 0434.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: Europe's World. See T 0145.
- 0737 Radio Netherlands: Newslines. See S 0037.
- 0745 BBC: Network UK. See T 0215.
- 0752 Radio Netherlands: Images. A cultural magazine, highlighting film, theatre, opera, books, and music.
- 1109 Deutsche Welle: Newslines Cologne. See M 1109.
- 1110 Kol Israel: With Me in the Studio. An interview with a studio guest.
- 1115 BBC: Waveguide. See S 0750.
- 1125 BBC: Book Choice. See S 0745.
- 1130 BBC: Megamix. See T 0030.
- 1134 Deutsche Welle: Hello Africa. See M 1134.
- 1137 Radio Netherlands: Newslines. See S 0037.
- 1152 Radio Netherlands: Images. See T 0752.
- 1215 BBC: Multitrack 1: Top 20. See M 2330.
- 1245 BBC: Sports Roundup. See S 1330.
- 1308 Radio Canada Int'l (Asia): Current Affairs. See S 1523.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Network UK. See T 0215.
- 1330 Radio Canada Int'l; North Country. See M 1330.
- 1345 BBC: Musical Feature. See S 0430.
- 1405 BBC: Outlook. See M 1405.

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- 0500 Christian Science Monitor: News
- 0500 Deutsche Welle: World News
- 0500 HCJB: Latin American News
- 0500 Kol Israel: News
- 0500 Radio Australia: World and Australian News
- 0500 Radio Beijing: News
- 0500 Radio Havana Cuba: News [T-S]
- 0500 Radio Japan: News
- 0500 Radio Lesotho: News
- 0500 Radio Moscow: News
- 0500 Radio New Zealand Int'l: News [M-A]
- 0500 Spanish Foreign Radio: News
- 0500 Voice of America: News
- 0500 WWCR: USA Radio News [T-A]
- 0510 Radio Beijing: News About China
- 0515 Radio Havana Cuba: Cuban Nat'l News [T-S]
- 0530 Christian Science Monitor (Af, Eur, NE Asia): [M]
- 0530 Christian Science Monitor: News [T-F]
- 0530 Radio Austria Int'l: News
- 0530 Radio Finland: Northern Report [T-A]
- 0530 Radio Havana Cuba: Newsbreak [T-S]
- 0530 Radio Jordan: News
- 0530 Radio Moscow (World Service): News in Brief
- 0530 Radio Romania Int'l: News
- 0530 UAE Radio, Dubai: News

- 0551 Spanish Foreign Radio: News Summary [S]
- 0555 HCJB: World News
- 0555 KUSW: News [S, T-F]
- 0600 BBC: Newsdesk
- 0600 Christian Science Monitor: News
- 0600 Deutsche Welle: World News
- 0600 Radio Australia: International Report
- 0600 Radio Havana Cuba: News [T-S]
- 0600 Radio Moscow: News
- 0600 Radio New Zealand Int'l: News [M-F]
- 0600 Voice of America: News
- 0605 Radio New Zealand Int'l: NZ News [M-F]
- 0605 Radio Pyongyang: News
- 0615 Radio Berlin Int'l: News
- 0618 Radio Canada Int'l: News [M-F]
- 0630 Christian Science Monitor: News [M-F]
- 0630 Radio Havana Cuba: Newsbreak [T-S]
- 0630 Radio Moscow (World Service): News in Brief
- 0630 Radio Polonia: News
- 0630 Radio Tirana, Albania: News
- 0630 Swiss Radio Int'l: News
- 0640 Radio Prague Int'l: News
- 0645 Radio Berlin Int'l: News
- 0645 Radio Romania Int'l: News
- 0655 KUSW: News [S, T-F]
- 0700 BBC: World News
- 0700 Christian Science Monitor: News

- 0700 Radio Australia: World and Australian News
- 0700 Radio Havana Cuba: News [T-S]
- 0700 Radio Japan: News
- 0700 Radio Moscow: News
- 0700 Radio New Zealand Int'l: News [M-F]
- 0700 Radio Tirana, Albania: News
- 0700 Voice of Free China: News
- 0715 Radio Havana Cuba: Cuban Nat'l News [T-S]
- 0730 BRT, Brussels: News [M-F]
- 0730 Christian Science Monitor: News [M-F]
- 0730 HCJB: Latin American News
- 0730 Radio Austria Int'l: News
- 0730 Radio Finland: Northern Report [T-A]
- 0730 Radio Havana Cuba: Newsbreak [T-S]
- 0730 Radio Moscow (World Service): News in Brief
- 0730 Radio Netherlands: News [M-A]
- 0730 Radio Prague Int'l: News
- 0730 Radio Sofia: News
- 0730 Swiss Radio Int'l: News
- 0755 KUSW: News [S]
- 0755 Radio Japan: News [M-F]
- 0800 BBC: World News
- 0800 Christian Science Monitor: News
- 0800 Radio Australia: International Report
- 0800 Radio Jordan: News Summary
- 0800 Radio Korea: News
- 0800 Radio Moscow (World Service): News

program

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- 1430 BBC: Off the Shelf. See M 0430.
- 1437 Radio Netherlands: Newslines. See S 0037.
- 1445 BBC: Musical Feature. See M 0145.
- 1452 Radio Netherlands: Images. See T 0752.
- 1509 Deutsche Welle: Newslines Cologne. See M 1109.
- 1515 BBC: A Jolly Good Show. Dave Lee Travis presents requests, the Record of the Month, and the album charts.
- 1523 Radio Canada Int'l: Current Affairs. See S 1523.
- 1534 Deutsche Welle: Insight. An in-depth feature, giving the background to political events and international developments.
- 1600 KSDA, Guam: Family Matters. See S 2300.
- 1609 Deutsche Welle: Newslines Cologne. See M 1109.
- 1615 BBC: Omnibus. A half-hour program on practically any topic.
- 1615 KSDA, Guam: Bible in Living Sound. See S 2315.
- 1630 KSDA, Guam: Greatest Story Ever Told. See M 0030.
- 1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
- 1637 Radio Netherlands: Newslines. See S 0037.
- 1645 BBC: The World Today. See M 1645.
- 1645 KSDA, Guam: Voice of Prophecy. See S 0030.
- 1652 Radio Netherlands: Images. See T 0752.
- 2300 KSDA, Guam: Family Matters. See S 2300.
- 2305 BBC: Commentary. See M 2305.
- 2308 Radio Canada Int'l: Current Affairs. See S 1523.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: Concert Hall. See S 1515.
- 2315 KSDA, Guam: Bible in Living Sound. See S 2315.
- 2330 KSDA, Guam: Voice of Prophecy. See S 0030.

Prince Claus of the Netherlands dedicates Radio Netherlands' new transmitter park in this QSL submitted by Ray Labrie.



Wednesday

Nov 7th, 14th, 21st, 28th

- 0000 KSDA, Guam: Family Matters. See S 2300.
- 0010 Kol Israel: With Me in the Studio. See T 1110.
- 0015 KSDA, Guam: Bible in Living Sound. See S 2315.
- 0025 Kol Israel: Faith to Faith. An examination of religion in Israeli communities.
- 0030 BBC: Omnibus. See T 1615.

- 0030 KSDA, Guam: Greatest Story Ever Told. See M 0030.
- 0030 Radio Canada Int'l: As It Happens. See T 0030.
- 0037 Radio Netherlands: Newslines. See S 0037.
- 0045 KSDA, Guam: Voice of Prophecy. See S 0030.
- 0052 Radio Netherlands: Images. See T 0752.
- 0101 BBC: Outlook. See M 1405.
- 0109 Deutsche Welle: European Journal. See M 0209.
- 0110 Kol Israel: Israel Sound. The latest in pop and rock music.
- 0125 BBC: Financial News. See M 2310.
- 0130 BBC: Feature. Topical programming on various subjects.
- 0134 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0145 BBC: Country Style. David Allan presents British country music.
- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: European Journal. See M 0209.
- 0210 Kol Israel: With Me in the Studio. See T 1110.
- 0215 BBC: Health Matters. See M 1115.
- 0230 BBC: Rock Salad. See T 0630.
- 0230 Radio Canada Int'l: As It Happens. See T 0030.
- 0234 Deutsche Welle: Insight. See T 1534.
- 0309 Deutsche Welle: European Journal. See M 0209.
- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: Discovery. An in-depth look at scientific

- research.
- 0334 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0337 Radio Netherlands: Newslines. See S 0037.
- 0352 Radio Netherlands: Images. See T 0752.
- 0408 Radio Canada Int'l: As It Happens. See T 0030.
- 0409 Deutsche Welle: European Journal. See M 0209.
- 0430 BBC: Off the Shelf. See M 0430.
- 0434 Deutsche Welle: Africa Report. See M 0434.
- 0438 Radio Canada Int'l: Current Affairs. See S 1523.
- 0445 BBC: Country Style. See W 0145.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: European Journal. See M 0209.
- 0530 BBC: Financial News. See M 2310.
- 0534 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0609 Deutsche Welle: European Journal. See M 0209.
- 0630 BBC: Meridian. The world of the arts, including music, drama, and books.
- 0630 Radio Canada Int'l: Open House. The effect of religion on politics, social justice, and personal relations.
- 0634 Deutsche Welle: Africa Report. See M 0434.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: Development '90. Aid and development issues.

0805 Radio Pyongyang: News	1000 BBC: News Summary	1100 Radio Jordan: News Summary
0825 HCJB: World News	1000 BRT, Brussels: News [M-F]	1100 Radio Korea: News
0830 Christian Science Monitor: News [M-F]	1000 Christian Science Monitor: News	1100 Radio Moscow (World Service): News
0830 Radio Beijing: News	1000 HCJB: Latin American News	1100 Radio RSA: News
0830 Radio Moscow (World Service): News In Brief	1000 Radio Australia: International Report	1100 Swiss Radio Int'l: News
0830 Radio Netherlands: News [M-A]	1000 Radio Berlin Int'l: News	1100 Trans World Radio, Bonaire: News [M-F]
0830 Swiss Radio Int'l: News	1000 Radio Jordan: News Summary	1100 Voice of America: News
0840 Radio Beijing: News About China	1000 Radio Moscow (World Service): News	1105 Radio Pyongyang: News
0840 Voice of Greece: News	1000 Swiss Radio Int'l: News	1109 BBC: News About Britain
0845 Radio Berlin Int'l: News	1000 Voice of America: News	1110 Radio Beijing: News About China
0855 KUSW: News [S]	1030 Christian Science Monitor: News [M-F]	1115 Radio Korea (World News Service): News
0900 BBC: World News	1030 Radio Austria Int'l: News [M-F]	1130 Christian Science Monitor: News [M-F]
0900 Christian Science Monitor: News	1030 Radio Korea: News [M-S]	1130 Deutsche Welle: African News [M-F]
0900 Deutsche Welle: World News	1030 Radio Moscow (World Service): News in Brief	1130 Radio Austria Int'l: News [M-F]
0900 Radio Australia: World and Australian News	1030 Radio Netherlands: News [M-A]	1130 Radio Lesotho: News
0900 Radio Finland: Northern Report [T-A]	1030 UAE Radio, Dubai: News	1130 Radio Moscow (World Service): News in Brief
0900 Radio Japan: News	1040 Voice of Greece: News	1130 Radio Netherlands: News [M-A]
0900 Radio Moscow (World Service): News	1045 Radio Berlin Int'l: News	1150 Radio Finland: Northern Report [T-F]
0915 Radio Korea (World News Service): News	1055 HCJB: World News	1155 KUSW: News [S]
0930 Christian Science Monitor: News [M-F]	1055 KUSW: News [S]	1155 Radio Japan: News [M-F]
0930 Deutsche Welle (Africa): African News [M-F]	1100 BBC: World News	1200 BBC: News Summary [S]; Newsreel [M-A]
0930 Radio Beijing: News	1100 Christian Science Monitor: News	1200 Christian Science Monitor: News
0930 Radio Finland: Northern Report [T-A]	1100 Deutsche Welle: World News	1200 Radio Australia: International Report
0930 Radio Moscow (World Service): News In Brief	1100 Kol Israel: News	1200 Radio Beijing: News
0940 Radio Beijing: News About China	1100 Radio Australia: World and Australian News	1200 Radio Berlin Int'l: News
0955 KUSW: News [S]	1100 Radio Beijing: News	1200 Radio Jordan: News
0955 Radio Japan: News [M-F]	1100 Radio Japan: News	1200 Radio Moscow (World Service): News

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- 0737 Radio Netherlands: Newslines. See S 0037.
- 0752 Radio Netherlands: Home, Market, and Family. Ginger da Silva looks at the upcoming European integration.
- 1109 Deutsche Welle: Newslines Cologne. See M 1109.
- 1110 Kol Israel: This Land. See M 0110.
- 1115 BBC: Country Style. See W 0145.
- 1130 BBC: Meridian. See W 0630.
- 1134 Deutsche Welle: Hello Africa. See M 1134.
- 1137 Radio Netherlands: Newslines. See S 0037.
- 1152 Radio Netherlands: Home, Market, and Family. See W 0752.
- 1215 BBC: Talk. A short commentary on various subjects.
- 1225 BBC: To Be Announced. Schedule changes not available at press time.
- 1245 BBC: Sports Roundup. See S 1330.
- 1308 Radio Canada Int'l (Asia): Current Affairs. See S 1523.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Development '90. See W 0730.
- 1330 Radio Canada Int'l: North Country. See M 1523.
- 1405 BBC: Outlook. See M 1405.
- 1430 BBC: Off the Shelf. See M 0430.
- 1437 Radio Netherlands: Newslines. See S 0037.
- 1445 BBC: Business Matters. See W 0430.
- 1452 Radio Netherlands: Home, Market, and Family. See W 0752.
- 1509 Deutsche Welle: Newslines Cologne. See M 1109.
- 1515 BBC: Poems by Post. See M 2315.
- 1523 Radio Canada Int'l: Current Affairs. See S 1523.

- 1530 BBC: Comedy. A regular series of humor (except November 28th: Two Cheers for November, a satirical look at the month just past).
- 1534 Deutsche Welle: Living in Germany. See M 0116.
- 1600 KSDA, Guam: Family Matters. See S 2300.
- 1609 Deutsche Welle: Newslines Cologne. See M 1109.
- 1615 BBC: Rock Salad. See T 0630.
- 1615 KSDA, Guam: Bible in Living Sound. See S 2315.
- 1630 KSDA, Guam: Greatest Story Ever Told. See M 0030.
- 1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
- 1637 Radio Netherlands: Newslines. See S 0037.
- 1645 BBC: The World Today. See M 1645.
- 1645 KSDA, Guam: Voice of Prophecy. See S 0030.
- 1652 Radio Netherlands: Home, Market, and Family. See W 0752.
- 2300 Kol Israel: Hebrew Lessons. See S 2300.
- 2300 KSDA, Guam: Family Matters. See S 2300.
- 2305 BBC: Commentary. See M 2305.
- 2308 Radio Canada Int'l: Current Affairs. See S 1523.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: Good Books. See M 0315.
- 2315 KSDA, Guam: Bible in Living Sound. See S 2315.
- 2330 BBC: Multitrack 2. Graham Bannerman presents new pop records, interviews, news, and competitions.
- 2330 KSDA, Guam: Voice of Prophecy. See S 0030.

- 0030.
- 0037 Radio Netherlands: Newslines. See S 0037.
- 0045 KSDA, Guam: Voice of Prophecy. See S 0030.
- 0052 Radio Netherlands: Home, Market, and Family. See W 0752.
- 0101 BBC: Outlook. See M 1405.
- 0109 Deutsche Welle: European Journal. See M 0209.
- 0110 Kol Israel: Israel Mosaic. See M 1110.
- 0125 BBC: Financial News. See M 2310.
- 0130 BBC: Waveguide. See S 0750.
- 0134 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0140 BBC: Book Choice. See S 0745.
- 0145 BBC: The Farming World. Developments and issues in the world of agriculture.
- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: European Journal. See M 0209.
- 0210 Kol Israel: Living Here. See H 0015.
- 0215 BBC: Network UK. See T 0215.
- 0230 BBC: Assignment. Examinations of current topical issues.
- 0230 Radio Canada Int'l: As It Happens. See T 0030.
- 0234 Deutsche Welle: Living in Germany. See M 0116.
- 0309 Deutsche Welle: European Journal. See M 0209.
- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: Quiz. See M 1215.
- 0334 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0337 Radio Netherlands: Newslines. See S 0037.
- 0352 Radio Netherlands: Home, Market, and Family. See W 0752.
- 0408 Radio Canada Int'l: As It Happens. See T 0030.
- 0409 Deutsche Welle: European Journal. See M 0209.
- 0430 BBC: Off the Shelf. See M 0430.
- 0434 Deutsche Welle: Africa Report. See M 0434.
- 0438 Radio Canada Int'l: Current Affairs. See S 1523.
- 0445 BBC: Andy Kershaw's World of Music. See M 0215.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: European Journal. See M 0209.
- 0530 BBC: Financial News. See M 2310.
- 0534 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.



News broadcasts in 18 languages on Kol Israel are supervised by Freddy Eytan.

Thursday

Nov 1st, 8th, 15th, 22nd, 29th

- 0000 KSDA, Guam: Family Matters. See S 2300.
- 0010 Kol Israel: Jewish News Review. A look at events affecting followers of Judaism.
- 0015 Kol Israel: Living Here. People who have made Israel their home.
- 0015 KSDA, Guam: Bible in Living Sound. See S 2315.
- 0030 BBC: Comedy (except November 29th: Two Cheers for November). See W 1530.
- 0030 KSDA, Guam: Greatest Story Ever Told. See M 0030.
- 0030 Radio Canada Int'l: As It Happens. See T 0030.

- 1400 Radio Canada Int'l: News [S]
- 1400 Radio Finland: Northern Report [T-A]
- 1400 Radio France Int'l: News
- 1400 Radio Japan: News
- 1400 Radio Jordan: News Summary
- 1400 Radio Korea: News
- 1400 Radio Moscow (World Service): News
- 1400 Radio Peace and Progress: News
- 1400 Voice of America: News
- 1400 WWCR: USA Radio News [M-F]
- 1405 Radio Pyongyang: News
- 1410 Radio Beijing: News About China
- 1425 HCJB: News [M-F]
- 1430 Christian Science Monitor: News [M-F]
- 1430 Radio Austria Int'l: News [M-F]
- 1430 Radio Moscow (World Service): News in Brief
- 1430 Radio Netherlands: News [M-A]
- 1430 Radio Poland: News
- 1445 Radio Berlin Int'l: News
- 1500 BBC: Newsreel
- 1500 Christian Science Monitor: News
- 1500 Deutsche Welle: World News
- 1500 Radio Australia: World and Australian News
- 1500 Radio Beijing: News
- 1500 Radio Finland: Northern Report [T-A]
- 1500 Radio Japan: News
- 1500 Radio Moscow (World Service): News

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- 1200 Radio Polonia: News
- 1200 Radio Romania Int'l: News
- 1200 Radio Tashkent: News
- 1200 Voice of America: News
- 1210 Radio Beijing: News About China
- 1215 Radio Korea: News
- 1230 Christian Science Monitor: News [M-F]
- 1230 Radio Cairo: News
- 1230 Radio France Int'l: News
- 1230 Radio Moscow (World Service): News in Brief
- 1230 Radio Polonia: News
- 1230 Trans World Radio, Bonaire: News [M-A]
- 1235 Voice of Greece: News
- 1245 Radio Berlin Int'l: News
- 1255 KUSW: News [S]
- 1300 BBC: News and Twenty-Four Hours on Sunday [S]; World News [M-A]
- 1300 Christian Science Monitor: News
- 1300 Radio Australia: World and Australian News
- 1300 Radio Beijing: News
- 1300 Radio Canada Int'l (Asia): News
- 1300 Radio Canada Int'l (N.Am): World Report [M-F]
- 1300 Radio Finland: Northern Report [T-F]
- 1300 Radio Moscow (World Service): News
- 1300 Radio Romania Int'l: News
- 1300 Radio Tirana, Albania: News
- 1300 Radio Yugoslavia: News
- 1300 Swiss Radio Int'l: News
- 1300 Trans World Radio, Bonaire: News [S]
- 1300 Voice of America: News
- 1300 WWCR: USA Radio News [S-F]
- 1305 Radio Pyongyang: News
- 1310 Radio Beijing: News About China
- 1315 Radio Berlin Int'l: News
- 1325 HCJB: News [M-F]
- 1328 Radio Cairo: News Headlines
- 1330 BRT, Brussels: News [M-F]
- 1330 Christian Science Monitor: News [M-F]
- 1330 Radio Austria Int'l: News
- 1330 Radio Korea (World News Service): News
- 1330 Radio Moscow (World Service): News in Brief
- 1330 Radio Tashkent: News
- 1330 Swiss Radio Int'l: News
- 1330 UAE Radio, Dubai: News
- 1330 Voice of America: News (Special English)
- 1330 Voice of Turkey: News
- 1345 Radio Berlin Int'l: News
- 1355 WYFR (Network): News [M-F]
- 1400 BBC: News Summary [A-S]; 5-Min News [M-F]
- 1400 Christian Science Monitor: News
- 1400 Radio Australia: International Report
- 1400 Radio Beijing: News

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- 0609 Deutsche Welle: European Journal. See M 0209.
- 0630 BBC: Talk. See W 1215.
- 0630 Radio Canada Int'l: Media File. The ethics, responsibilities, and performance of the media.
- 0634 Deutsche Welle: Africa Report. See M 0434.
- 0645 BBC: The Farming World. See H 0145.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: Write On.... Paddy Feeny reads listener letters.
- 0737 Radio Netherlands: Newslines. See S 0037.
- 0745 BBC: Network UK. See T 0215.
- 0752 Radio Netherlands: Media Network. Jonathan Marks surveys communications developments worldwide.
- 1109 Deutsche Welle: Newslines Cologne. See M 1109.
- 1110 Kol Israel: Studio Three. A look at the arts, music, and culture in Israel.
- 1115 BBC: The Farming World. See H 0145.
- 1130 BBC: Serial. A dramatic reading of a book (except November 1st: Lonelyheart 4122, the final part of Colin Watson's novel).
- 1134 Deutsche Welle: Hello Africa. See M 1134.
- 1137 Radio Netherlands: Newslines. See S 0037.
- 1152 Radio Netherlands: Media Network. See H 0752.
- 1215 BBC: Multitrack 2. See W 1830.
- 1245 BBC: Sports Roundup. See S 1330.
- 1308 Radio Canada Int'l (Asia): Current Affairs. See S 1523.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Network UK. See T 0215.
- 1330 Radio Canada Int'l: North Country. See M 1523.
- 1345 BBC: Jazz Now and Then or Folk in Britain. A look at jazz or folk music on the British Isles.
- 1405 BBC: Outlook. See M 1405.
- 1430 BBC: Off the Shelf. See M 0430.
- 1437 Radio Netherlands: Newslines. See S 0037.
- 1445 BBC: Write On.... See H 0730.
- 1452 Radio Netherlands: Media Network. See H 0752.
- 1509 Deutsche Welle: Newslines Cologne. See M 1109.
- 1515 BBC: Music for a While with Richard Baker. Classical music with the well-known broadcaster.
- 1523 Radio Canada Int'l: Current Affairs. See S 1523.
- 1534 Deutsche Welle: Spotlight on Sport. Background stories and coverage of important sporting events.



Bob Cadman of RCI's "Innovation Canada" and "Spotlight on Science."

- 1600 KSDA, Guam: Family Matters. See S 2300.
- 1609 Deutsche Welle: Newslines Cologne. See M 1109.
- 1615 BBC: Assignment. See H 0230.
- 1615 KSDA, Guam: Bible in Living Sound. See S 2315.
- 1630 KSDA, Guam: Greatest Story Ever Told. See M 0030.
- 1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
- 1637 Radio Netherlands: Newslines. See S 0037.
- 1645 BBC: The World Today. See M 1645.
- 1645 KSDA, Guam: Voice of Prophecy. See S 0030.
- 1652 Radio Netherlands: Media Network. See H 0752.
- 2300 KSDA, Guam: Family Matters. See S 2300.
- 2305 BBC: Commentary. See M 2305.
- 2308 Radio Canada Int'l: Current Affairs. See S 1523.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: Music Review. Classical music events and developments from around the world.
- 2315 KSDA, Guam: Bible in Living Sound. See S

- 2315.
- 2330 KSDA, Guam: Voice of Prophecy. See S 0030.

Friday

Nov 2nd, 9th, 16th, 23rd, 30th

- 0000 KSDA, Guam: Family Matters. See S 2300.
- 0010 Kol Israel: This Land. See M 0110.
- 0015 KSDA, Guam: Bible in Living Sound. See S 2315.
- 0025 Kol Israel: Off Center. A program presented by Daniel Gavron.
- 0030 BBC: Best on Record. Examinations of various recordings of classical music compositions (except November 30th: Musical Feature, programming on various musical topics).
- 0030 KSDA, Guam: Greatest Story Ever Told. See M 0030.
- 0030 Radio Canada Int'l: As It Happens. See T 0030.
- 0037 Radio Netherlands: Newslines. See S 0037.
- 0045 KSDA, Guam: Voice of Prophecy. See S 0030.
- 0052 Radio Netherlands: Media Network. See H 0752.
- 0101 BBC: Outlook. See M 1405.
- 0109 Deutsche Welle: European Journal. See M 0209.
- 0110 Kol Israel: Studio Three. See H 1110.
- 0125 BBC: Financial News. See M 2310.
- 0130 BBC: Jazz Now and Then or Folk in Britain. See H 1345.
- 0134 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0145 BBC: Global Concerns. Issues of an environmental nature.
- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: European Journal. See M 0209.
- 0210 Kol Israel: This Land. See M 0110.
- 0215 BBC: Seven Seas. A weekly program about ships and the sea.
- 0230 BBC: Serial (except November 2nd: Lonelyheart 4122). See H 1130.
- 0230 Radio Canada Int'l: As It Happens. See T 0030.
- 0234 Deutsche Welle: Spotlight on Sport. See W 1534.
- 0309 Deutsche Welle: European Journal. See M 0209.

- 1500 Radio Romania Int'l: News
- 1500 Radio RSA: News
- 1500 Voice of America: News
- 1500 WWCR: USA Radio News
- 1505 Radio Pyongyang: News
- 1510 Radio Beijing: News About China
- 1515 Radio Canada Int'l (Europe): News
- 1525 Radio Finland: News Summary
- 1530 Christian Science Monitor: News [M-F]
- 1530 Deutsche Welle: African News [M-F]
- 1530 FEBA, Seychelles: News
- 1530 Radio Moscow (World Service): News in Brief
- 1530 Radio Tirana, Albania: News
- 1530 Swiss Radio Int'l: News
- 1530 Voice of Greece: News [M-A]
- 1545 Radio Berlin Int'l: News
- 1545 Radio Korea (World News Service): News
- 1600 BBC: World News
- 1600 Christian Science Monitor: News
- 1600 Deutsche Welle: World News
- 1600 Radio Australia: International Report
- 1600 Radio Beijing: News
- 1600 Radio France Int'l: News
- 1600 Radio Jordan: News Summary
- 1600 Radio Korea: News
- 1600 Radio Lesotho: News
- 1600 Radio Moscow (World Service): News

- 1600 Radio Polonia: News
- 1600 Radio Portugal: News [M-F]
- 1600 Radio RSA: News
- 1600 Voice of America: News
- 1600 WWCR: USA Radio News [M-F]
- 1609 BBC: News About Britain
- 1610 Radio Beijing: News About China
- 1630 BRT, Brussels: News [M-F]
- 1630 Christian Science Monitor: News [M-F]
- 1630 Radio Austria Int'l: News
- 1630 Radio Moscow (World Service): News in Brief
- 1630 Radio Netherlands: News [M-A]
- 1630 Radio Polonia: News
- 1630 UAE Radio, Dubai: News
- 1630 Voice of America(exc Africa): News(Spec Eng)
- 1645 Radio Berlin Int'l: News
- 1655 WYFR (Network): News [A]
- 1700 BBC: World News [S-F]; News Summary [A]
- 1700 Christian Science Monitor: News
- 1700 Radio Australia: World and Australian News
- 1700 Radio Beijing: News
- 1700 Radio Japan: News
- 1700 Radio Jordan: Newsdesk [S-H]
- 1700 Radio Moscow (World Service): News
- 1700 Radio New Zealand Int'l: News [M-F]
- 1700 Radio Prague Int'l: News
- 1700 Radio RSA: News

- 1700 Voice of America: News
- 1705 Radio New Zealand Int'l: NZ News [M-F]
- 1705 Radio Pyongyang: News
- 1710 Radio Beijing: News About China
- 1715 Radio Canada Int'l: News
- 1715 Radio Korea (World News Service): News
- 1730 Christian Science Monitor: News [M-F]
- 1730 Radio Moscow (World Service): News in Brief
- 1730 Radio Peace and Progress: News
- 1730 Radio Romania Int'l: News
- 1735 WYFR (Network): News [M-F]
- 1755 KUSW: News [M-F]
- 1800 BBC: Newsdesk
- 1800 Christian Science Monitor: News
- 1800 Kol Israel: News
- 1800 KVOH: UPI News
- 1800 Radio Australia: International Report
- 1800 Radio Bras, Brasilia: News [M-A]
- 1800 Radio Canada Int'l: News
- 1800 Radio Korea: News
- 1800 Radio Moscow (World Service): News
- 1800 Radio New Zealand Int'l: News [S-F]
- 1800 Radio RSA: News
- 1800 RAE, Buenos Aires: News [M-F]
- 1800 Voice of America: News
- 1800 WWCR: USA Radio News [A]
- 1825 WYFR (Network): News [A]

program guide

- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
- 0334 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0334 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0337 Radio Netherlands: Newsline. See S 0037.
- 0352 Radio Netherlands: Media Network. See H 0752.
- 0408 Radio Canada Int'l: As It Happens. See T 0030.
- 0409 Deutsche Welle: European Journal. See M 0209.
- 0430 BBC: Off the Shelf. See M 0430.
- 0434 Deutsche Welle: Africa Report. See M 0434.
- 0438 Radio Canada Int'l: Current Affairs. See S 1523.
- 0445 BBC: Jazz Now and Then or Folk in Britain. See H 1345.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: European Journal. See M 0209.
- 0530 BBC: Financial News. See T 0125.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0609 Deutsche Welle: European Journal. See M 0209.
- 0630 BBC: Meridian. See W 0630.
- 0630 Radio Canada Int'l: Arts Tonight. Interviews, panel discussions and reviews covering the arts.
- 0634 Deutsche Welle: Africa Report. See M 0434.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: Feature. Topical programming on various subjects.
- 0737 Radio Netherlands: Newsline. See S 0037.
- 0752 Radio Netherlands: Rembrandt Express. Pete Myers presents a magazine program.
- 1109 Deutsche Welle: Newsline Cologne. See M 1109.
- 1110 Kol Israel: Thank Goodness It's Friday. A look at Judaism today.
- 1115 BBC: Global Concerns. See F 0145.
- 1130 BBC: Meridian. See W 0630.
- 1134 Deutsche Welle: Hello Africa. See M 1134.
- 1137 Radio Netherlands: Asiascan. A live magazine show with interviews with newsmakers, press reviews, monthly quizzes and listener opinion.
- 1215 BBC: Feature. See F 0730.
- 1245 BBC: Sports Roundup. See S 1330.
- 1308 Radio Canada Int'l (Asia): Current Affairs. See S 1523.
- 1309 BBC: Twenty-Four Hours. See S 0509.



A few of KSDA's Asian staff - John Wilson, Greg Scott, Hannah Liu, Richard Liu.

- 1330 BBC: Short Story. See T 0130.
- 1330 Radio Canada Int'l: North Country. See M 1523.
- 1345 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.
- 1405 BBC: Outlook. See M 1405.
- 1430 BBC: Off the Shelf. See M 0430.
- 1437 Radio Netherlands: Asiascan. See F 1137.
- 1445 BBC: Feature. See M 0445.
- 1509 Deutsche Welle: Newsline Cologne. See M 1109.
- 1515 BBC: Music Review. See H 2315.
- 1523 Radio Canada Int'l: Current Affairs. See S 1523.
- 1534 Deutsche Welle: Economic Notebook. A look at the economic scene in Germany and around the world.
- 1600 KSDA, Guam: Family Matters. See S 2300.
- 1609 Deutsche Welle: Newsline Cologne. See M 1109.
- 1615 BBC: Science in Action. See M 0230.
- 1615 KSDA, Guam: Bible in Living Sound. See S 2315.

- 1630 KSDA, Guam: Greatest Story Ever Told. See M 0030.
- 1634 Deutsche Welle: Asia-Pacific Report. See M 1634.
- 1637 Radio Netherlands: Newsline. See S 0037.
- 1645 BBC: The World Today. See M 1645.
- 1645 KSDA, Guam: Voice of Prophecy. See S 0030.
- 1652 Radio Netherlands: Airtime Africa. Music, discussion with studio guests, and analysis of the issues that concern both Europe and Africa.
- 2300 Kol Israel: Hebrew Lessons. See S 2300.
- 2300 KSDA, Guam: Family Matters. See S 2300.
- 2305 BBC: Commentary. See M 2305.
- 2308 Radio Canada Int'l: Current Affairs. See S 1523.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: Worldbrief. A roundup of the week's news headlines and human-interest happenings.
- 2315 KSDA, Guam: Bible in Living Sound. See S 2315.
- 2330 BBC: Multitrack 3. Sarah Ward surveys the British alternative music scene.
- 2330 KSDA, Guam: Voice of Prophecy. See S 0030.

Saturday

Nov 3rd, 10th, 17th, 24th

- 0000 KSDA, Guam: Your Story Hour. See S 0000.
- 0010 Kol Israel: Letter from Jerusalem. Commentary on a major news story.
- 0015 Kol Israel: Thank Goodness It's Friday. See F 1110.
- 0030 BBC: From the Weeklies. A review of the weekly British press.
- 0030 KSDA, Guam: Voice of Prophecy. See S 0030.
- 0030 Radio Canada Int'l: As It Happens. See T 0030.
- 0037 Radio Netherlands: Newsline. See S 0037.
- 0045 BBC: Recording of the Week. See M 0545.
- 0052 Radio Netherlands: Rembrandt Express. See F 0752.
- 0101 BBC: Outlook. See M 1405.
- 0109 Deutsche Welle: European Journal. See M 0209.
- 0110 Kol Israel: Shabbat Shalom. Sabbath greetings and record requests.
- 0125 BBC: Financial News. See M 2310.

newsline cont'd from p.63

- 1830 BRT, Brussels: News [M-F]
- 1830 Christian Science Monitor: News [M-F]
- 1830 Radio Moscow (World Service): News in Brief
- 1830 Radio Netherlands: News [M-A]
- 1830 Radio Polonia: News
- 1830 Radio Prague Int'l: News
- 1830 Radio Tirana, Albania: News
- 1830 Swiss Radio Int'l: News
- 1830 Voice of America: News (Special English)
- 1840 SLBC, Sri Lanka: News
- 1840 Voice of Greece: News [M-A]
- 1845 Radio Berlin Int'l: News
- 1855 KUSW: News [M-A]
- 1900 BBC: News Summary
- 1900 Christian Science Monitor: News [M-A]
- 1900 Deutsche Welle: World News
- 1900 HCJB: Latin American News
- 1900 KVOH: UPI News
- 1900 Radio Australia: World and Australian News
- 1900 Radio Beijing: News
- 1900 Radio Canada Int'l: News [M-F]
- 1900 Radio Havana Cuba: News [M-A]
- 1900 Radio Japan: News
- 1900 Radio Jordan: News Summary [S-H]
- 1900 Radio Moscow (World Service): News

- 1900 Radio New Zealand Int'l: News [S-F]
- 1900 Radio Portugal: News [M-F]
- 1900 Spanish Foreign Radio: News
- 1900 Voice of America: News
- 1900 WWCR: USA Radio News [M-F]
- 1903 Radio Jamahiriya, Libya: News Headlines
- 1910 Radio Beijing: News About China
- 1920 Voice of Greece: News [M-A]
- 1930 Christian Science Monitor: News [M-F]
- 1930 Deutsche Welle: African News [M-F]
- 1930 Radio Austria Int'l: News
- 1930 Radio Budapest: News
- 1930 Radio Canada Int'l: News [M-F]
- 1930 Radio Finland: Northern Report [M-F]
- 1930 Radio Havana Cuba: Newsbreak [M-A]
- 1930 Radio Moscow (World Service): News in Brief
- 1930 Radio Romania Int'l: News
- 1930 Radio Sofia: News
- 1930 Radio Yugoslavia: News
- 1935 Radiotelevisione Italiana: News
- 1945 Radio Korea (World News Service): News
- 1947 Radio Jamahiriya, Libya: News
- 1955 HCJB: World News
- 1955 KUSW: News [M-F]
- 1955 Radio Finland: News Summary
- 1955 WYFR (Network): News [M-A]
- 2000 BBC: World News

- 2000 Christian Science Monitor: News
- 2000 Kol Israel: News
- 2000 KVOH: UPI News
- 2000 Radio Australia: International Report
- 2000 Radio Beijing: News
- 2000 Radio Havana Cuba: News [M-A]
- 2000 Radio Jordan: News Summary [S-H]
- 2000 Radio Moscow (World Service): News
- 2000 Radio New Zealand Int'l: News [S-F]
- 2000 Radio Polonia: News
- 2000 Radio Portugal: News [M-F]
- 2000 Radio Prague Int'l: News
- 2000 Voice of America: News
- 2005 Radio New Zealand Int'l: NZ News [S-H]
- 2005 Radio Pyongyang: News
- 2010 Radio Beijing: News About China
- 2015 Radio Berlin Int'l: News
- 2025 Radio Havana Cuba: Cuban Nat'l News [M-A]
- 2025 Radiotelevisione Italiana: News
- 2030 Christian Science Monitor: News [M-F]
- 2030 Radio Havana Cuba: Newsbreak [M-A]
- 2030 Radio Korea: News
- 2030 Radio Moscow (World Service): News in Brief
- 2030 Radio Netherlands: News [M-A]
- 2045 Radio Berlin Int'l: News
- 2045 Radio Korea (World News Service): News
- 2055 KUSW: News [M-A]

program

guide

- 0130 BBC: Feature. Programming on various topics (except November 3rd: The Ones That Got Away, theatre shows that were acclaimed flops).
- 0134 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0145 BBC: Book Choice. See S 0745.
- 0150 BBC: New Ideas. See T 0445.
- 0200 KSDA, Guam: Listener Mailbox. Responses to listener letters.
- 0209 BBC: British Press Review. See S 0209.
- 0209 Deutsche Welle: Commentary. See S 01C9.
- 0210 Kol Israel: Thank Goodness It's Friday. See F 1110.
- 0215 BBC: Network UK. See T 0215.
- 0215 KSDA, Guam: Focus on Living. Life's problems and their solutions.
- 0223 Deutsche Welle: Panorama. A review of the major news events of the week.
- 0230 BBC: People and Politics. Background to the British political scene.
- 0230 KSDA, Guam: Power to Cope. See S 1630.
- 0230 Radio Canada Int'l: As It Happens. See T 0030.
- 0234 Deutsche Welle: Economic Notebook. See F 1534.
- 0309 Deutsche Welle: European Journal. See M 0209.
- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: The Vintage Chart Show. Paul Burnett presents top ten hits from the music charts of yesteryear.
- 0334 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0337 Radio Netherlands: Newslines. See S 0037.
- 0352 Radio Netherlands: Rembrandt Express. See F 0752.
- 0400 Radio Canada Int'l: As It Happens. See T 0030.
- 0409 Deutsche Welle: Commentary. See S 0109.
- 0423 Deutsche Welle: Panorama. See A 0223.
- 0430 BBC: Here's Humph! See F 1345.
- 0434 Deutsche Welle: Man and Environment. See T 0234.
- 0438 Radio Canada Int'l: Current Affairs. See S 1523.
- 0445 BBC: Worldbrief. See F 2315.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0509 Deutsche Welle: European Journal. See M 0209.
- 0530 BBC: Financial News. See M 2310.
- 0534 Deutsche Welle: Transatlantic Diary. See T 0134.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.



Jackie Beecham talks to travel guide Mike Rogoff for Kol Israel's "This Land." In the background is the Church of the Visitation in Ein Kerem, Israel.

- 0609 Deutsche Welle: Commentary. See S 0109.
- 0623 Deutsche Welle: Panorama. See A 0223.
- 0630 BBC: Meridian. See W 0630.
- 0634 Deutsche Welle: Man and Environment. See T 0234.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: From the Weeklies. See F 2315.
- 0737 Radio Netherlands: Newslines. See S 0037.
- 0745 BBC: Network UK. See T 0215.
- 0752 Radio Netherlands: Over To You. See S 0052.
- 1109 Deutsche Welle: Africa This Week. A review of trends and events on the African continent.
- 1110 Kol Israel: Spotlight. See S 0010.
- 1115 BBC: Feature. See A 0130.
- 1130 BBC: Meridian. See W 0630.
- 1134 Deutsche Welle: Mailbag Africa. Listeners' questions, music requests, and the club corner.
- 1137 Radio Netherlands: Newslines. See S 0037.
- 1152 Radio Netherlands: Over to You. See S 0052.
- 1200 Radio Norway Int'l: Norway Today. See S 0100.
- 1215 BBC: Multitrack 3. See F 2330.
- 1245 BBC: Sports Roundup. See S 1330.
- 1300 Radio Norway Int'l: Norway Today. See S 0100.

- 1308 Radio Canada Int'l: Innovation Canada. See S 0008.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Network UK. See T 0215.
- 1345 BBC: Sportsworld. A weekly sports magazine.
- 1401 BBC: Sportsworld. See A 1345.
- 1437 Radio Netherlands: Newslines. See S 0037.
- 1452 Radio Netherlands: Over to You. See S 0052.
- 1509 Deutsche Welle: Africa Highlight. A weekly feature on an important topic concerning Africa.
- 1513 Deutsche Welle: Development Forum. Reports and interviews on projects and progress in Africa and Asia.
- 1515 BBC: Sportsworld. See A 1345.
- 1523 Radio Canada Int'l: Current Affairs. See S 1523.
- 1534 Deutsche Welle: Science and Technology. See M 0234.
- 1600 KSDA, Guam: Micronesia Snapshots. The news, music, and culture of Micronesia.
- 1600 Radio Norway Int'l: Norway Today. See S 0100.
- 1609 Deutsche Welle: International Talking Point. See S 0419.
- 1615 BBC: Sportsworld. See A 1345.
- 1615 KSDA, Guam: Listener Mailbox. See A 0200.
- 1623 Deutsche Welle: Development Forum. See A 1513.
- 1630 KSDA, Guam: DX Asiawaves. See S 0230.
- 1634 Deutsche Welle: Religion and Society. See S 1509.
- 1637 Radio Netherlands: Newslines. See S 0037.
- 1645 KSDA, Guam: Probe. See S 0245.
- 1652 Radio Netherlands: Over to You. See S 0052.
- 2300 KSDA, Guam: Micronesia Snapshots. See A 1600.
- 2305 BBC: Words of Faith. See S 0540.
- 2308 Radio Canada Int'l: Innovation Canada. See S 0008.
- 2310 BBC: Book Choice. See S 0745.
- 2315 BBC: A Jolly Good Show. See T 1515.
- 2315 KSDA, Guam: Focus on Living. See A 0215.
- 2330 KSDA, Guam: DX Asiawaves. See S 0230.
- 2345 KSDA, Guam: Probe. See S 0245.

SUGGESTIONS? OMISSIONS?

Send your comments to Program Manager Kannon Shanmugam at 4412 Tumberly Circle, Lawrence, Kansas 66047.

- 2100 BBC: News Summary
- 2100 Christian Science Monitor: News [M-A]
- 2100 Deutsche Welle: World News
- 2100 KVOH: UPI News
- 2100 Radio Australia: World and Australian News
- 2100 Radio Beijing: News
- 2100 Radio Japan: News
- 2100 Radio Jordan: News Summary [S-H]
- 2100 Radio Kiev: News
- 2100 Radio Moscow (World Service): News
- 2100 Radio New Zealand Int'l: News [S-F]
- 2100 Radio Prague Int'l: News
- 2100 Radio Romania Int'l: News
- 2100 Spanish Foreign Radio: News
- 2100 Swiss Radio Int'l: News
- 2100 Voice of America: News
- 2100 Voice of Turkey: News
- 2110 Radio Beijing: News About China
- 2125 WYFR (Network): News [M-F]
- 2130 Christian Science Monitor: News [M-F]
- 2130 Radio Budapest: News
- 2130 Radio Cairo: News
- 2130 Radio Canada Int'l: News
- 2130 Radio Moscow (World Service): News in Brief
- 2130 Radio Sofia: News
- 2155 KUSW: News [M-A]
- 2200 BBC: Newshour

- 2200 BRT, Brussels: News [M-F]
- 2200 Christian Science Monitor: News
- 2200 Radio Australia: International Report
- 2200 Radio Beijing: News
- 2200 Radio Canada Int'l (Asia): News
- 2200 Radio Canada Int'l (Europe): The World at Six [M-F]; News [A-S]
- 2200 Radio Finland: Northern Report [M-F]
- 2200 Radio Havana Cuba: News [M-A]
- 2200 Radio Moscow (World Service): News
- 2200 Radio New Zealand Int'l: News [S-F]
- 2200 Radio Peace and Progress: News
- 2200 Radio Yugoslavia: News
- 2200 Radiotelevisione Italiana: News
- 2200 Voice of America: News
- 2200 Voice of Free China: News
- 2208 Voice of America(Carib):Caribbean News[M-F]
- 2210 Radio Beijing: News About China
- 2225 Radio Havana Cuba: Cuban Nat'l News [M-A]
- 2230 Christian Science Monitor: News [M-F]
- 2230 Kol Israel: News
- 2230 Radio Havana Cuba: Newsbreak [M-A]
- 2230 Radio Moscow (World Service): News In Brief
- 2230 Radio Polonia: News
- 2230 Radio Sofia: News
- 2230 Radio Tirana, Albania: News
- 2230 Radio Vilnius: News

- 2230 Swiss Radio Int'l: News
- 2230 Voice of America: News (Special English)
- 2230 WYFR (Network): News [M-F]
- 2245 Radio Berlin Int'l: News
- 2255 KUSW: News [M-F]
- 2255 WYFR (Network): News [M-A]
- 2300 BBC: World News [A-S]; 5-Min News [M-F]
- 2300 Christian Science Monitor: News [M-A]
- 2300 Radio Australia: World and Australian News
- 2300 Radio Canada Int'l: News
- 2300 Radio Japan: News
- 2300 Radio Moscow: News
- 2300 Radio New Zealand Int'l: News [S-F]
- 2300 Radio Vilnius: News
- 2300 Voice of America: News
- 2300 Voice of Turkey: News
- 2305 Radio Polonia: News
- 2305 Radio Pyongyang: News
- 2315 Radio for Peace Int'l: UN Radio News [M-F]
- 2330 Christian Science Monitor: News [M-F]
- 2330 Radio Moscow (World Service): News in Brief
- 2330 Radio New Zealand Int'l: News [S-H]
- 2330 Radio Tirana, Albania: News
- 2333 Radio Jamahiriyah, Libya: News Headlines
- 2335 Voice of Greece: News [M-A]
- 2355 KUSW: News [M-A]
- 2355 Radio Japan: News [M-F]

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 Also on Fidonet, Shortwave Echo
 Compuserve 72260,317

Larry Miller
 Pennsylvania

frequency

section

0000 UTC [7:00 PM EST/4:00 PM PST]

0000-0015	Radio Prague Int'l, Czechoslovakia	7345	11680	11990
0000-0025	Radio Finland, Helsinki	11755	15185	
0000-0030	Radio Canada Int'l, Montreal	5960	9755	
0000-0030	Kol Israel, Jerusalem	9435	11605	12077
0000-0030	Radio Australia, Melbourne	11880	13605	15240 15380
		15465	17600	17630 17750
		17795		
0000-0050	Radio Pyongyang, North Korea	11975	15115	
0000-0100	All India Radio, New Delhi	9535	9910	11715 11745
		15110		
0000-0100	Radio Thailand, Bangkok	4830	9655	11905
0000-0100	Radio New Zealand, Wellington	17675		
0000-0100	BBC World Service, London, England	5975	6005	6175 6195
		7325	9590	9915 11750
		12095	15260	17830
0000-0100	Adventist World Radio, Costa Rica	9725	11870	
0000-0100	Radio Moscow N.American Service	11710	11730	11780 11850
		11980	12040	15425 15580
		15595		
0000-0100	Radio Sofia, Bulgaria	11660	11720	
0000-0100	Radio Kiev, Ukraine	7400	9860	11790 13645

0000-0100	Radio Moscow World Service	15280	17670	17890	21690
		21790			
0000-0100	CBC Northern Quebec Service, Can	9625	(ML)		
0000-0100	CBN, St. John's, Nfld, Canada	6160			
0000-0100	CBU, Vancouver, British Columbia	6160			
0000-0100	CFCF, Montreal, Quebec, Canada	6005			
0000-0100	CFCN, Calgary, Alberta, Canada	6030			
0000-0100	CHNS, Halifax, Nova Scotia, Canada	6130			
0000-0100	Christian Science World Svc, Boston	7395	9850	13760	15225
		15610	17555	(+17865	
		A.S)			
0000-0100	CKWX, Vancouver, British Columbia	6080			
0000-0100	CFRB, Toronto, Ontario, Canada	6070			
0000-0100	FEBR Radio Int'l, Philippines	15490			
0000-0100	KSDA, Guam	15125			
0000-0100	T-A KUSW, Salt Lake City, Utah	15590			
0000-0100	Radio Beijing, Beijing, China	15100	17705		
0000-0100	Radio Luxembourg, Junglinster	6090			
0000-0100	Spanish National Radio, Madrid	9630	11880		
0000-0100	Voice of America-Americas Service	5995	9775	9815	11580
		15205			
0000-0100	Voice of America-Caribbean Service	6130	9455	11695	
0000-0100	Voice of America-East Asla Service	7120	9770	11760	15185
		15290	17735	17820	
0000-0100	Radio for Peace Int'l, Costa Rica	7375	13630	21566	
0000-0100	WHRI, Noblesville, Indiana	7315	9495		
0000-0100	WINB, Red Lion, Pennsylvania	15145	ML		
0000-0100	WRNO Worldwide, Louisiana	7355			
0000-0100	WWCR, Nashville, Tennessee	7520			
0000-0100	WYFR, Okeechobee, Florida	5985	13695	15170	
0030-0100	T-S Radio Canada Int'l, Montreal	5960	9755		
0030-0100	Radio Australia, Melbourne	11880	15160	15240	15465
		15560	17630	17750	17795
		21525	21740	21775	

the frequency file

november 1990

Please note: The last major frequency changeover until May takes place this month. We will therefore, in keeping with our emphasis on timeliness, bring you these changes in the very next edition of MT.

Another One Bites The Dust

With the reunification of Germany, we've lost one of the most interesting shortwave stations in recent memory: Radio Berlin International, the Voice of the German Democratic Republic. It's odd that one could miss something that for so long was just another mind-boggling fountain of deceit, but it's happened. How interesting it would have been to have heard the GDR's point of view of the upheavals that will take place there over the next several years.

I always liked their interval signal. It's gone. The British-accented announcers had a certain gentle if somewhat puzzling delivery. They're gone. I once designed an aerogramme-style reception reporting form for them (yes, I was an RBI DX-Club member) and they thanked me by mailing me an album by Uschi Bruning, a popular jazz artist there. I loved the album, and felt genuine gratitude.

When I first moved to Winston-Salem several years ago, I had to go to the post office to pick up a registered parcel. I had no idea what it was and I didn't particularly like the inconvenience of having to go to the post office to pick it up. When I got there the clerk reminded me that I needed to get a new drivers license (with the new address) and then, ostensibly satisfied that I was who I said I was, handed me the package.

It was from RBI and contained an RBI ink pen and keychain, all neatly packed in a small red and black-carrying case that resembled a mutant ladyfinger cookie. Just a little gift to let me know they were still out there.

It doesn't matter that we won't any longer be getting those little "tokens of our appreciation", as they called them. It doesn't matter that the thoughts behind such "goodies", as we aficionados of shortwave often call them, were not altogether altruistic. It doesn't even matter that the short handwritten notes that often accompanied their verification cards ("sorry for the delay in responding but with summer vacations we've been short-staffed") were somewhat unique and unheard of from their colleagues in Koln.

What does matter is that we've lost yet another shortwave station to history. Just as Radio RSA stopped transmitting overseas earlier this year, RBI has taken a somewhat similar course, albeit under some drastically different circumstances.

In that brief window of peace that opened with the triumphs of the Europeans and Africans, and closed with the Iraqi invasion of Kuwait, we've also seen the demise of not only RBI, but Radio Kuwait as well. The former was more widely heard and closed down under totally different circumstances. It was voluntary, more or less. Radio Kuwait was not.

Perhaps this can serve to show us all how much we take for granted. We had little idea several years ago that the two Germans would reunite. We had little idea several months ago that Kuwait City would be a run-down and occupied shantytown out of a bad science fiction movie. Yet, life doesn't sit around and ask for our permission to happen.

Just as nothing should be taken for granted, so goes the airwaves. Perhaps the very last act of Radio Berlin International could be to serve as a very poignant reminder that this is the season of thanksgiving.

-- Greg Jordan, Frequency Manager

frequency

section

0030-0100	BRT Brussels, Belgium	9925 13675	
0030-0100	T-S Radio Budapest, Hungary	6110 9520 9585 9835	
		11910 15160	
0030-0100	Radio Netherlands Int'l, Hilversum	6020 6165 11740	
0035-0100	HCJB, Quito, Ecuador	15155 17875 25950ssb	
0050-0100	Vatican Radio, Vatican City	9605 11780 15180	

0100 UTC [8:00 PM EST/5:00 PM PST]

0100-0105	Vatican Radio, Vatican City	9605 11780 15180	
0100-0115	All India Radio, New Delhi	9535 9910	
		11715 11745 15110	
0100-0125	RAI, Rome, Italy	9575 11800	
0100-0125	Radio Netherlands Int'l, Hilversum	6020 6165 11740	
0100-0130	Kol Israel, Jerusalem	9435 11605 12077	
0100-0130	S,M Radio Norway, Oslo	9615 11925	
0100-0130	Radio Australia, Melbourne	11880 15160 15240 15465	
		15560 17630 17750 17795	
		21525 21740 21775	
0100-0130	Radio Canada International, Montreal	5960 9755	
0100-0130	Radio Japan Americas Svc, Tokyo	17755	
0100-0130	Radio Prague Int'l, Czechoslovakia	5930 7345 11680	
0100-0130	CBC Northern Quebec Service, Can	9625 (ML)	
0100-0130	Radio Sweden, Stockholm	15405	
0100-0145	Radio Yugoslavia, Belgrade	5980 6005 11735	
0100-0150	Deutsche Welle, Kolin, West Germany	6040 6145 9565	
		15105 11865	
0100-0200	Radio Thailand, Bangkok	4830 9655 11905	
0100-0200	WINB Red Lion, PA	15145 ML	
0100-0200	Radio Moscow North American Svc	11690 11710 11730 11780	
		11850 11980 12040 15290	
		15425 15580 15595	
0100-0200	Radio Moscow World Service	15280 17690 21690 21790	
0100-0200	BBC World Service, London, England	5975 6005 6175 7325	
		9590 9915 11750 12095	
		15260 21715	
0100-0200	S,M Radio Canada Int'l, Montreal	9535 11845 11940	
		13720	
0100-0200	Radio New Zealand, Wellington	17675	
0100-0200	CBN, St John's, Newfoundland	6160	
0100-0200	CBU, Vancouver, British Columbia	6160	
0100-0200	CFCF, Montreal, Quebec, Canada	6005	
0100-0200	CFCN, Calgary, Alberta, Canada	6030	
0100-0200	CHNS, Halifax, Nova Scotia, Canada	6130	
0100-0200	Christian Science World Svc, Boston	7395 9850 13760 15225	
		15610 17555 (+17865 A.S)	

0100-0200	CKWX, Vancouver, British Columbia	6080	
0100-0200	CFRB, Toronto, Ontario, Canada	6070	
0100-0200	FEBC Radio Int'l, Philippines	15490	
0100-0200	HCJB, Quito, Ecuador	17875 15155	
0100-0200	T-A KUSW, Salt Lake City, Utah	15590	
0100-0200	Radio Havana Cuba	11820	
0100-0200	Radio Japan General Svc, Tokyo	5960 17765 17810 17835	
		17845	
0100-0200	Radio Luxembourg, Junglinster	6090	
0100-0200	Radio for Peace Int'l, Costa Rica	7375 (T-A add 13630)	
0100-0200	Spanish National Radio, Madrid	9630 11880	
0100-0200	Voice of America-Americas Service	5995 9775 9815 11580	
		15205	
0100-0200	Voice of America-Caribbean Service	6130 9455	
0100-0200	Voice of America-East Asia Service	7115 7205 9740 11705	
		15205 21525	
0100-0200	Voice of Indonesia, Jakarta	11753 11785	
0100-0200	WHRI, Noblesville, Indiana	7315 9495	
0100-0200	WRNO Worldwide, Louisiana	7355	
0100-0200	WWCR, Nashville, Tennessee	7520	
0100-0200	WYFR, Okeechobee, Florida	5985 9505 11720 17612	
0130-0200	Radio Budapest, Hungary	6110 9520 9585 9835	
		11910 15160	
0130-0200	M-A Voice of Greece, Athens	11645 9395 9420	
0130-0200	Radio Baghdad, Iraq	11755 11810 11830 21585	
0130-0200	Radio Austria International, Vienna	9870 9875 13730	
0130-0200	S,M Radio Canada Int'l, Montreal	5960 9755	
0130-0200	Radio Australia, Melbourne	11880 15160 15240 15465	
		15560 17630 17750 17795	
		21525 21740 21775	
0145-0200	Radio Korea, Seoul	6165 9640 15575	
0145-0200	Vatican Radio, Vatican City	9650 11750 15135	

0200 UTC [9:00 PM EST/6:00 PM PST]

0200-0220	Radio Veritas-Asia, Philippines	15220 15360	
0200-0230	SLBC Domestic Service, Sri Lanka	4940	
0200-0230	Kol Israel, Jerusalem	9435 11605 12077	
0200-0230	H,A Radio Budapest, Hungary	6110 9520 9585 9835	
		11910 15160	
0200-0230	FEBC Radio Int'l, Philippines	15490	
0200-0230	T-A Voice of America	5995 9775 9815 11580	
		15205	
0200-0230	S,M Radio Norway, Oslo	9615 11735	
0200-0230	British Forces Radio, UK	7125 9640 13745	

LEGEND

* The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.

* In the space between the end time and the station name is the broadcast schedule.

S=Sunday M=Monday T=Tuesday W=Wednesday
H=Thursday F=Friday A=Saturday

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

The last entry on a line is the frequency. Several codes may be found after a frequency as follows:

- * SSB indicates Single Sideband transmission.
- * v after a frequency indicates that it varies
- * Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
- * [ML] after a frequency indicates a multi-lingual transmission containing English-language programs. All other frequencies may be assumed to be English language programs directed to various parts of the world.
- * Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

HOW TO USE THE PROPAGATION CHARTS

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (they are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!



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CLASSIC



R71A .1-30 MHz

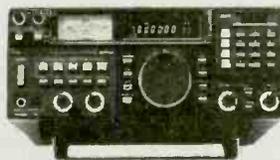
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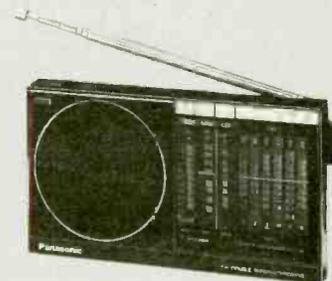


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frequency

section

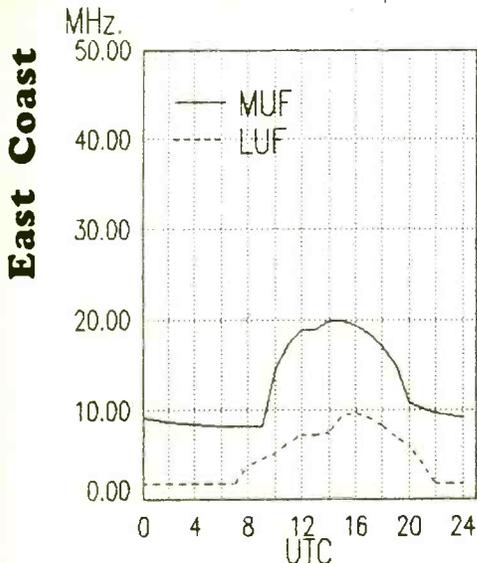
0200-0230	Swiss Radio International, Berne	6095 6135 9650 9885
		12035 17730
0200-0250	Deutsche Welle, Koln, W. Germany	7285 9615 9690 11835
		11945 15235 17770
0200-0300	Radio Thailand, Bangkok	4830 9655 11905
0200-0300 T-A	Radio Canada Int'l, Montreal	9535 11845 11940 13720
0200-0300	BBC World Service, London, England	5975 6005 6110 6175
		7135 7325 9410 9590
		9915 11750 12095 15260
		15390 21715
0200-0300	RAE, Buenos Aires, Argentina	11710
0200-0300	KSDA, Guam	13720
0200-0300	Radio Moscow North American Svc	11690 11710 11780 11850
		11980 12040 12050 13605
		13675 15290 15315 15425
		15435 15530 15580 15595
0200-0300	Radio Moscow World Service	15280 17690 21690 21790
0200-0300	CBC Northern Quebec Service, Can	9625 (ML)
0200-0300	CBN, St. John's, Newfoundland, Can	6160
0200-0300	CBU, Vancouver, British Columbia	6160
0200-0300	CFCF, Montreal, Quebec, Canada	6005
0200-0300	CFCN, Calgary, Alberta, Canada	6030
0200-0300	CHNS, Halifax, Nova Scotia, Canada	6130
0200-0300	Christian Science World Svc, Boston	9455 9850 13720 13760
		(+ 17865 & 17555 A.S)
0200-0300	CKWX, Vancouver, British Columbia	6080
0200-0300	CFRB, Toronto, Ontario, Canada	6070
0200-0300	HCJB, Quito, Ecuador	15155 17875 25950ssb
0200-0300 T-A	KUSW, Salt Lake City, Utah	15590
0200-0300	Radio Australia, Melbourne	11880 15160 15240 15320
		15465 15560 17630 17750
		17795 21525 21740 21775
0200-0300	Radio Baghdad, Iraq	11755 11810 11830 21585
0200-0300 T-A	Radio For Peace Int'l, Costa Rica	7375 USB (T-A add 13630)
0200-0300	Radio Romania Int'l, Bucharest	5990 6155 9510 9570
		11830 11940 15380
0200-0300	Radio Cairo, Egypt	9475 9675
0200-0300	Radio Havana Cuba	9710 11820
0200-0300	Radio Luxembourg, Junglinster	6090
0200-0300	Voice of America-South Asia Service	7115 7205 9740 11705
		15160 15250 21525
0200-0300	Radio Cultura, Guatemala	3300
0200-0300	Radio New Zealand, Wellington	17675
0200-0300	Voice of Free China, Taiwan	5950 7445 9680
0200-0300	WHRI, Noblesville, Indiana	7315 9495
0200-0300	WRNO Worldwide, Louisiana	7355

0200-0300	WWCR, Nashville, Tennessee	7520
0200-0300	WINB, Red Lion, Pennsylvania	15145
0200-0300	WYFR, Okeechobee, Florida	6065 9505 11720
0230-0245	Radio Pakistan (Slow speed news)	9545 15115 17640 17690
		17725 21730
0230-0300 T-A	Radio Portugal, Lisbon	9600 9680 9705 11840
0230-0300	Radio Sweden, Stockholm	9695 11705
0230-0300	Radio Tirana, Albania	9500 11825

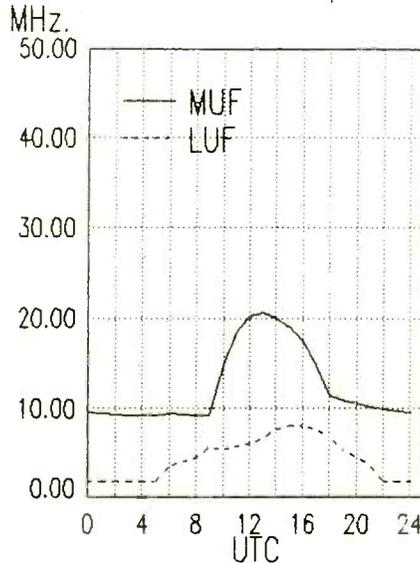
0300 UTC [10:00 PM EST/7:00 PM PST]

0300-0315	Azad Kashmir Radio, Pakistan	7286 4980 3665
0300-0330	WINB Red Lion, PA	15145 ML
0300-0330	Radio Australia, Melebourne	11880 15160 15240 15320
		15465 15560 17630 17750
		17795 21525 21740 21775
0300-0330	Radio Cairo, Egypt	9475 9675
0300-0330	Radio Japan, Tokyo	15325 17825 21610
0300-0330	Radio Prague Int'l, Czechoslovakia	5930 7345 11680
0300-0330	Radio Baghdad, Iraq	11755 11810 11830
0300-0350	Deutsche Welle, Koln, West Germany	6085 6120 9545 15205
		11810
0300-0355	Radio Beijing, China	9690 11715 15100
0300-0400	Radio New Zealand, Wellington	17675
0300-0400	BBC World Service, London, England	5975 6005 6175 6195
		7135 7325 9410 9600
		9915 11750 12095 15220
		15260 15420 17705 21715
0300-0400	CBC, Northern Quebec Service, Can	9625 (ML)
0300-0400	Radio Moscow North American Svc	9635 12050 13605 15180
		15425 15455 15530 15580
		15595
0300-0400	Radio Moscow World Service	15280 17690 21690 21790
0300-0400	CBN, St. John's, Newfoundland, Can	6160
0300-0400	CBU, Vancouver, British Columbia	6160
0300-0400	CFCF, Montreal, Quebec, Canada	6005
0300-0400	CFCN, Calgary, Alberta, Canada	6030
0300-0400	CHNS, Halifax, Nova Scotia, Canada	6130
0300-0400	Christian Science World Svc, Boston	9455 9850 13720 13760
		15225 (+ 17865 & 17555 A.S)
0300-0400	CKWX, Vancouver, British Columbia	6080
0300-0400	CFRB, Toronto, Ontario, Canada	6070
0300-0400	Faro del Caribe, San Jose, Costa Rica	5055 9645
0300-0400	HCJB, Quito, Ecuador	17875 15155
0300-0400	Radio Cultural, Guatemala	3300
0300-0400	Radio Havana Cuba	9710 11820

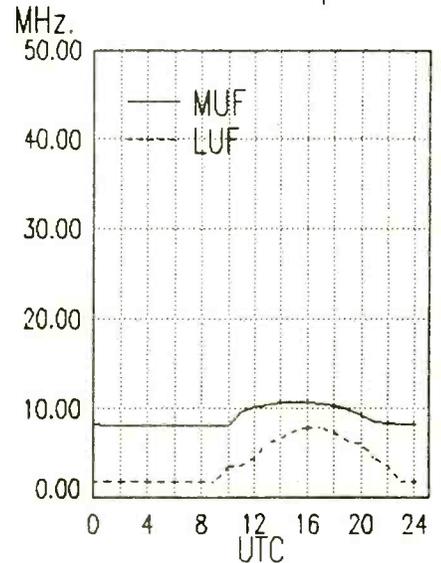
East Coast To Western Europe



East Coast To Eastern Europe



East Coast To Arctic Europe



0300-0400	Radio Thailand, Bangkok	4830	9655	11905	
0300-0400	Radio Japan, Tokyo	15195	17810		
		(+ 7125 to 0330)			
0300-0400	T-A KUSW, Salt Lake City, Utah	15590	11695		
0300-0400	Trans World Radio, Bonaire	9535	11930		
0300-0400	Voice of America-Africa Service	6035	7170	7280	9525
		9575	11835		
0300-0400	Voice of Free China, Taiwan	5950	7445	9680	9765
		11745	15345	17845	
0300-0400	WHRI, Noblesville, Indiana	7315	9495		
0300-0400	WRNO Worldwide, Louisiana	7355			
0300-0400	WWCR, Nashville, Tennessee	7520			
0300-0400	WYFR, Okeechobee, Florida	6065	9505	15440	
0310-0325	Vatican Radio, Vatican City	11725			
0315-0330	Radio for Peace Int'l, Costa Rica	7375	USB		
0315-0345	Radio France International, Paris	3965	5990	7135	7280
		9745	9790	9800	11705
		11790	11995	15135	15155
		15300			
0330-0400	Radio Netherlands Int'l, Hilversum	9590	11720		
0330-0400	Radio Tirana, Albania	9500	11825		
0330-0400	Radio Tanzania	9684			
0330-0400	Radio Australia, Melbourne	11880	15160	15240	15320
		15465	15560	17795	21525
		21740	21775		
0330-0400	United Arab Emirates Radio, Dubai	11945	13675	15400	15435
0340-0350	M-A Voice of Greece, Athens	11645	9395	9420	
0349-0357v	Radio Yerevan, Armenia	11675	11790	15180	15455
		15485	17555		
0350-0400	RAI, Rome, Italy	11905	15330	17795	
		17690	17665		

0400 UTC [11:00 PM EST/8:00 PM PST]

0400-0410	M-F Radio Zambia, Lusaka	4910			
0400-0410	RAI, Rome, Italy	11905	15330	17795	
0400-0415	Radio Prague Int'l, Czechoslovakia	5930	7345	11680	
0400-0425	Radio Cultural, Guatemala	3300			
0400-0425	Radio Netherlands Int'l, Hilversum	9590	11720		
0400-0430	Radio Tanzania	9684			
0400-0430	Radio Thailand, Bangkok	4830	9655	11905	
0400-0430	Radio Romania Int'l, Bucharest	5990	6155	9510	9570
		11830	11940	15380	
0400-0430	Radio Australia, Melbourne	11880	15160	15240	15320
		15465	15560	17795	21525
		21740	21775		

0400-0430	Swiss Radio International, Berne	6135	9650	9885	12035
0400-0430	Trans World Radio, Bonaire	11930	9535		
0400-0450	Deutsche Welle, Köln, West Germany	7225	7150	9765	9565
		11765	15265		
0400-0450	Radio Pyongyang, North Korea	15180	15230	17765	
0400-0455	Radio Beijing, China	11685	11840		
0400-0500	Voice of America-Africa Service	6025	6035	7280	9525
		9575	11785	11835	
0400-0500	T-A KUSW Salt Lake City, Utah	9815	IRR		
0400-0500	Radio Canada Int'l, Montreal	11925			

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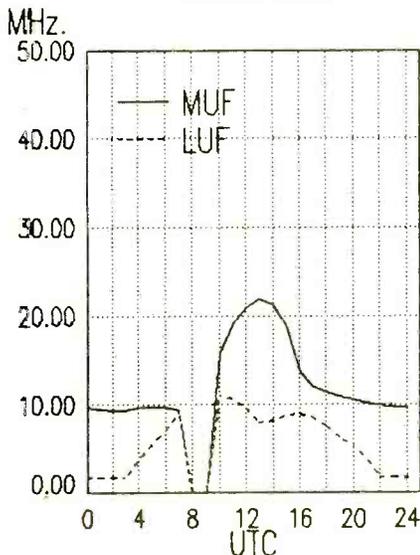
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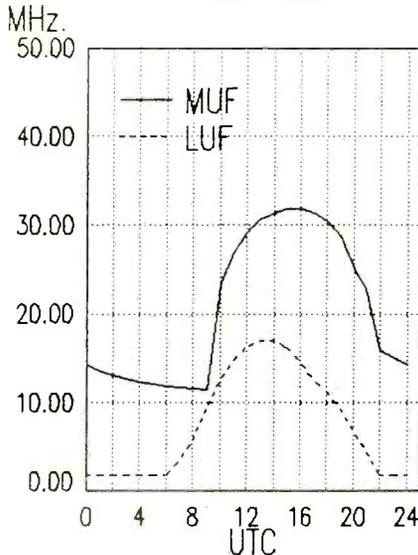
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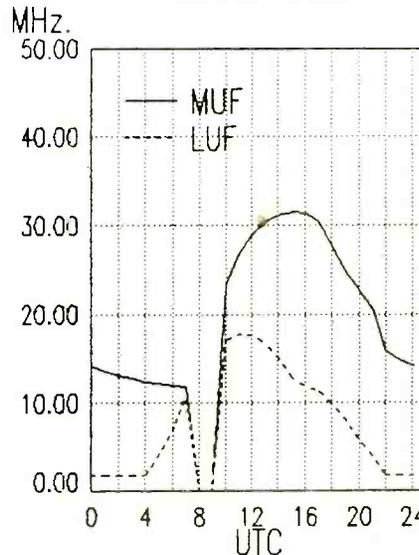
East Coast To Middle East



East Coast To West Africa



East Coast To Central Africa



East Coast

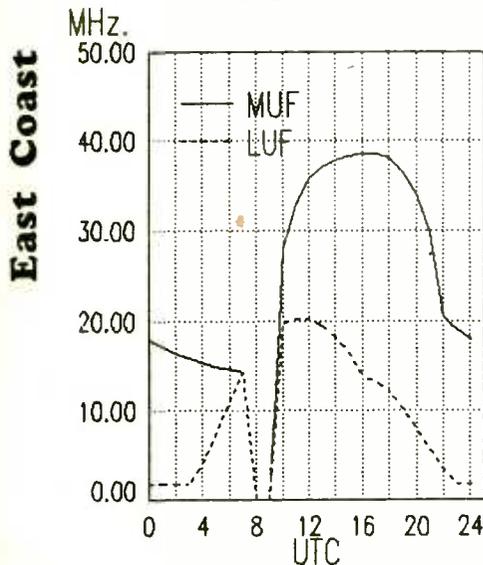
frequency

section

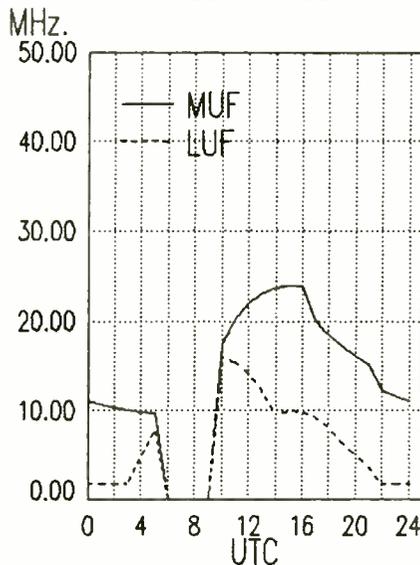
0400-0500	Radio Moscow North American Svc	9635 11895 12050 13605 15180 15425 15455 15530 15595(+17605 from 0430)
0400-0500	Radio New Zealand, Wellington	17675
0400-0500	BBC World Service, London, England	5975 6005 6195 7105 7120 9410 9580 9600 9610 9670 9915 12095 15070 15245 17885 21470 21715
0400-0500	Radio Sofia, Bulgaria	7115 11720 11735 11760
0400-0500	Voice of Turkey, Ankara	9445 17880
0400-0500	Radio Moscow World Service	15280 17690 21690 21790
0400-0500	CBC, Northern Quebec Service	9625 (ML)
0400-0500	Radio for Peace Int., Costa Rica	7375 USB
0400-0500	Radio RSA, Johannesburg	7270 11900
0400-0500	CBN, St. John's, Newfoundland, Can	6160
0400-0500	CBU, Vancouver, British Columbia	6160
0400-0500	CFCF, Montreal, Quebec, Canada	6005
0400-0500	CFCN, Calgary, Alberta, Canada	6030
0400-0500	CHNS, Halifax, Nova Scotia, Canada	6130
0400-0500	Christian Science World Svc, Boston	9455 9840 13720 13760 15225 17780 (+17555 A,S)
0400-0500	CKWX, Vancouver, British Columbia	6080
0400-0500	CFRB, Toronto, Ontario, Canada	6070
0400-0500	HCJB, Quito, Ecuador	17875 15155
0400-0500	KSDA, Guam	15225
0400-0500	Radio Havana Cuba	9710 9750 11760 11820
0400-0500	S-F WMLK Bethel, Pennsylvania	9465
0400-0500	Voice of America-Middle East Service	3980 5995 6040 6140 7170 7200 11785 15205
0400-0500	WHRI, Noblesville, Indiana	7315 9495
0400-0500	WRNO Worldwide, Louisiana	6185
0400-0500	WWCR, Nashville, Tennessee	7520
0400-0500	WYFR, Okeechobee, Florida	6065 9505
0425-0440	RAI, Rome, Italy	5990 7275
0430-0500	M-F NBC Windhoek, Namibia	3270 3290
0430-0500	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17630 17750 17795 21525 21740 21775 5015
0430-0500	IRR Radio Truth (clandestine intended for Zimbabwe)	
0430-0500	Radio Tirana, Albania	9500 11835
0455-0500	Voice of Nigeria, Lagos	7255

0500 UTC [12:00 AM EST/9:00 PM PST]			
0500-0505	Radio Lesotho	4800	
0500-0515	Kol Israel, Jerusalem	9435 11605 11655 12077 15640 17575	
0500-0515	Azad Kashmir Radio, Pakistan	7268 4980 3665	
0500-0520	Vatican Radio	6185 9645	
0500-0530	Vatican Radio African Service	17710 17730 21650	
0500-0530	M-F NBC Windhoek, Namibia	3270 3290	
0500-0550	Deutsche Welle, Koln, West Germany	5960 6120 9670 11705 11845	
0500-0600	BBC World Service, London, England	5975 6005 6195 7120 9410 9600 9640 9915 12095 15070 17740 17885 21470 21715	
0500-0600	CBU, Vancouver, British Columbia	6160	
0500-0600	CFCF, Montreal, Quebec, Canada	6005	
0500-0600	CFCN, Calgary, Alberta, Canada	6030	
0500-0600	Radio Thailand, Bangkok	4830 9655 11905	
0500-0600	WRNO New Orleans, Louisiana	6185	
0500-0600	CHNS, Halifax, Nova Scotia, Canada	6130	
0500-0600	S-F WMLK Bethel, Pennsylvania	9465	
0500-0600	Christian Science World Svc, Boston	9455 9840 13720 13760 15225 17780 (+	
17555 A,S)			
0500-0600	Radio Moscow North American Svc	9635 11895 12050 13605 15180 15425 15455 15530 15595 17605	
0500-0600	Radio Moscow World Service	15280 17690 21690 21790	
0500-0545	Radio New Zealand, Wellington	17675	
0500-0600	CKWX, Vancouver, British Columbia	6080	
0500-0600	CFRB, Toronto, Ontario, Canada	6070	
0500-0600	HCJB, Quito, Ecuador	15155 17875	
0500-0600	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17630 17750 17795 21525 21740 21775	
0500-0600	Radio Havana Cuba	5965 9710 11760 11820	
0500-0600	Radio Japan General Service, Tokyo	15195 17765 17810 17825 17890	
0500-0600	Radio for Peace Int., Costa Rica	7375 USB	
0500-0600	Spanish National Radio, Madrid	9630	
0500-0600	Voice of America-Africa Service	3990 6035 7280 9540 9575	
0500-0600	Voice of America-Middle East Service	3980 5995 6140 7170 7200 11785 15205	
0500-0600	Voice of Nigeria, Lagos	7255	
0500-0600	WHRI, Noblesville, Indiana	7315 9495	

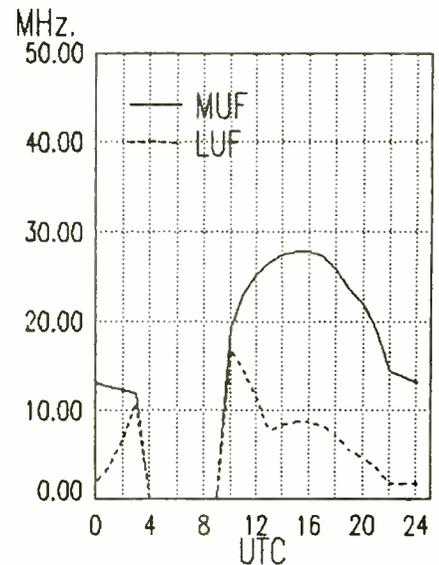
East Coast To South Africa



East Coast To East Africa



East Coast To Indian Ocean



frequency

section

0500-0600	WWCR, Nashville, Tennessee	7520
0500-0600	WYFR, Okeechobee, Florida	5985 11580 17640 15566
0510-0530	M-A Radio Botswana	3356 4830 7255
0530-0600	Radio Austria International, Vienna	6015
0530-0600	Radio Romania Int'l, Bucharest	15340 15380 17720 17745 17790 21665
0530-0600	M-F NBC Windhoek, Namibia	3270
0530-0600	UAE Radio Dubai	15435 17830 21700
0545-0600	Radio New Zealand, Wellington	9855/17675
0555-0600	Voice of Malaysia, Kuala Lumpur	6175 9750 15295

0600 UTC [1:00 AM EST/10:00 PM PST]

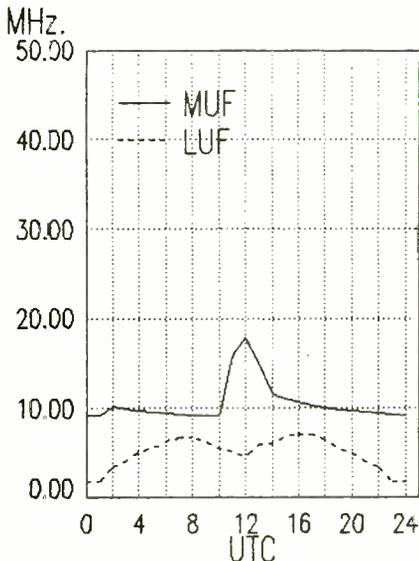
0610-0615	Sierra Leone Brdcstg.Svc.,Freetown	3316
0600-0645	Radio For Peace, Int., Costa Rica	7375 USB
0600-0650	Radio Pyongyang, North Korea	15180 15230
0600-0650	Deutsche Welle, Köln, W. Germany	11765 13790 15185 17875
0600-0650	CBU, Vancouver, British Columbia	6160
0600-0700	Radio Australia, Melbourne	11880 13700 13705 15240 15465 17630 21525 21740 21775
0600-0700	Radio Havana Cuba	5965 11760 11820
0600-0700	M-A Vatican Radio	6248 9645 11740 ML
0600-0700	BBC World Service, London, England	5975 6180 6195 7120 7150 9410 9580 9600 9640 12095 15070 15245 15280 15400 15420 17640 17710 17790 17885 21470 21715
0600-0700	M-F NBC Windhoek, Namibia	7165 7190
0600-0700	CFCF, Montreal, Quebec, Canada	6005
0600-0700	SIBC Solomon Islands	5020 9545
0600-0700	Radio New Zealand, Wellington	9855/17675
0600-0700	WYFR, Okeechobee, Florida	5985 6065 7355 13760 15566 17640
0600-0700	ABC Domestic Network, Australia	15425
0600-0700	S-F WMLK Bethel, Pennsylvania	9465
0600-0700	CFCN, Calgary, Alberta, Canada	6030
0600-0700	CHNS, Halifax, Nova Scotia, Canada	6130
0600-0700	Christian Science World Svc, Eoston	9455 9840 11705 13720 15225 17780
0600-0700	CKWX, Vancouver, British Columbia	6080
0600-0700	CFRB, Toronto, Ontario, Canada	6070
0600-0700	Radio Moscow North American Svc.	9635 12050 13605 15180 15425 15530 15595 17605
0600-0700	Radio Moscow World Service	15280 17690 21690 21790
0600-0700	Voice of the Mediterranean, Malta	9765

0600-0700	HCJB, Quito, Ecuador	15155 17875
0600-0700	ABC Brisbane, Australia	9660
0600-0700	Radio Tonga, Kingdom of Tonga	5030v
0600-0700	Voice of America-Africa Service	3990 6035 6080 6125 7280 9530 9540 9575 11915
0600-0700	Voice of America-Middle East Serv	3980 5965 5995 6060 6095 6140 7170 7200 7325 9715 11785 11805 11925 15195 15205 17715
0600-0700	WHRI, South Bend, Indiana	7315 9495
0600-0700	Voice of Hope, Lebanon	6280
0600-0700	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0618-0700	M-F Radio Canada International, Montreal	6050 6150 7155 9740 9760 11840 17840 6115 7105 7175 9615 9715
0630-0645	RTV Congolaise, Brazzaville* *(Experimental broadcasts)	11755 9560 6120 9715
0630-0700	Radio Finland, Helsinki	11755 9560 6120
0630-0700	Vatican Radio African Service	17710 17730 21650
0630-0700	BRT, Brussels, Belgium	13675 11695
0630-0700	Radio Tirana, Albania	9500 7205
0630-0700	Radio Polonia, Warsaw, Poland	6135 7270 15120 9675
0630-0700	Swiss Radio International, Berne	15430 17570 21770
0645-0700 A	Radio for Peace Int., Costa Rica	7375 USB
0645-0700	GBC Radio, Accra, Ghana	6130
0645-0700	HCJB, Quito, Ecuador	9610 11835 (alt 6050)
0645-0700	Radio Romania Int'l, Bucharest	11810 11940 15335 17720 17805 21665

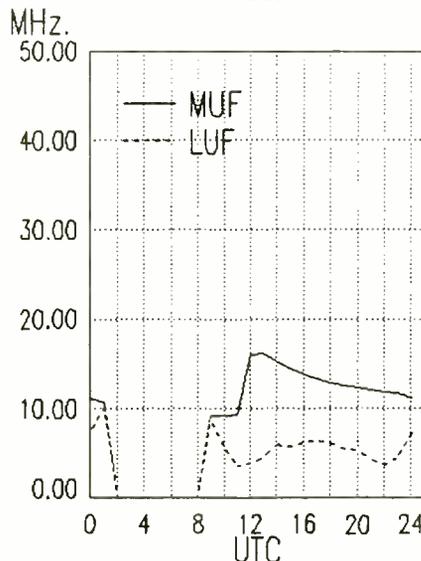
0700 UTC [2:00 AM EST/11:00 PM PST]

0700-0710	Sierra Leone Brdcstg.Svc.,Freetown	3316
0700-0715	Radio Romania Int'l, Bucharest	11810 11940 15335 17720 17805 21665
0700-0725	BRT Brussels, Belgium	21815 11695 6035
0700-0730	Radio Australia, Melbourne	11880 13705 15240 15465 17630 21525 21740 21775
0700-0730	Radio Tirana, Albania	11835 9500
0700-0750	Radio Pyongyang, North Korea	15340 17795
0700-0800 A	Radio for Peace Int'l, Costa Rica	7375 USB
0700-0800	Voice of Hope, Lebanon	6280
0700-0800	CBU, Vancouver, British Columbia	6160
0700-0800	TWR Monte Carlo	9480
0700-0800	Radio Havana Cuba	11835
0700-0800	WYFR, Okeechobee, Florida	6065 7355 13760 15566
0700-0800	Voice of the Mediterranean, Malta	9725
0700-0800	ZBC-1, Zimbabwe	7283

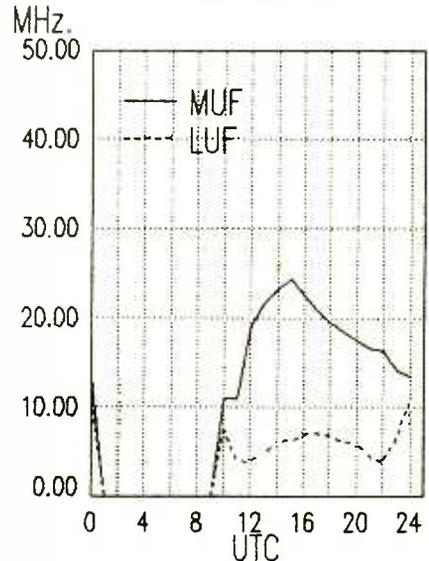
East Coast To
Central Asia



East Coast To
South East Asia



East Coast To
Indonesia



East Coast

frequency

section

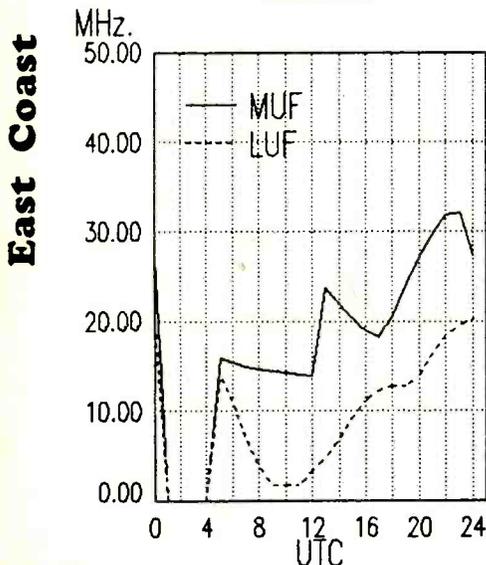
0700-0800	Radio New Zealand, Wellington	9855			
0700-0800	BBC World Service, London	5975	7150	9410	9600
		9640	9760	11940	12095
		15070	15280	15360	15400
		21715			
0700-0800	Solomon Islands Broadcasting Co.	5020	9545		
0700-0800	Voice of Free China, Taiwan	5950			
0700-0800	WHRI Noblesville, Indiana	7315	9495		
0700-0800	ABC Brisbane, Australia	9660			
0700-0800	CFCF, Montreal, Quebec, Canada	6005			
0700-0800	CFCN, Calgary, Alberta, Canada	6030			
0700-0800	CHNS, Halifax, Nova Scotia, Canada	6130			
0700-0800	Christian Science World Svc, Boston	9455	9840	11705	13720
		15225	17780		
0700-0800	Radio Moscow World Service	15280	17690	21690	21790
0700-0800	CFRB, Toronto, Ontario, Canada	6070			
0700-0800	GBC Radio, Accra, Ghana	6130			
0700-0800	Radio Korea, Seoul	7550	13670		
0700-0800	HCJB, Quito, Ecuador	9610	11835	15270	
0700-0800	KNLS, Anchor Point, Alaska	9785			
0700-0800	Radio Japan, Tokyo	17765	17810	17890	21590
		21690			
0700-0800	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0710-0800	HCJB, Quito, Ecuador (S. Pacific Sv.)	6130	9745	11925	
0730-0800	Radio Prague Int'l, Czechoslovakia	17840	21705		
0730-0800	ABC, Alice Springs, Australia	2310	(ML)		
0730-0800	ABC, Katherine, Australia	2485			
0730-0800	ABC, Tennant Creek, Australia	2325	(ML)		
0730-0800	Radio Austria Int'l, Vienna	21490	15410	13730	6155
0730-0800	HCJB Quito, Ecuador	9745	11925		
0730-0800	KTWR, Agana Guam	15200			
0730-0800	Radio Australia, Melbourne	6035	11880	13705	15240
		17630	21525	21775	
0730-0800	Radio Netherlands, Hilversum	9630	15560		
0730-0800	Radio Sofia, Bulgaria	11720	15160	17825	
0730-0800	Swiss Radio Int'l European Service	3985	6165	9535	

0800-0850	Radio Pyongyang, North Korea	15180	15230		
0800-0900	Radio Moscow World Service	15280	17690	21690	21790
0800-0900	KTWR, Guam	15200			
0800-0900	Trans World Radio, Monte Carlo	9480			
0800-0900	ABC Brisbane, Australia	9660			
0800-0900	BBC, London	15280	9640	12095	15070
		15360	21715	15400	9410
		21660			
0800-0900	ABC, Alice Springs, Australia	2310	(ML)		
0800-0900	ABC, Katherine, Australia	2485			
0800-0900	ABC, Perth, Australia	15425			
0800-0900	ABC, Tennant Creek, Australia	2325	(ML)		
0800-0900	A Radio for Peace Int'l, Costa Rica	7375	USB		
0800-0900	Voice of Hope, Lebanon	6280			
0800-0900	CBN, St. John's, Newfoundland, Can	6160			
0800-0900	CBU, Vancouver, British Columbia	6160			
0800-0900	Radio Havana, Cuba	11835			
0800-0900	Radio Australia (Southwest Pacific)	6020	6035	6080	9710
0800-0900	WHRI, South Bend, Indiana	7315	7355		
0800-0900	CFCF, Montreal, Quebec, Canada	6005			
0800-0900	CFCN, Calgary, Alberta, Canada	6030			
0800-0900	CHNS, Halifax, Nova Scotia, Canada	6130			
0800-0900	Christian Science World Svc	9455	9530	9840	13720
		15225	15610		
0800-0900	CKWX, Vancouver, British Columbia	6080			
0800-0900	CFRB, Toronto, Ontario, Canada	6070			
0800-0900	HCJB, Quito, Ecuador	6130	9610	11835	
0800-0900	HCJB, Quito, Ecuador (all pro)	9745	11925	15270	
0800-0900	KNLS, Anchor Point, Alaska	11715			
0800-0900	Solomon Islands Broadcasting Co.	5020			
0800-0900	WHRI, South Bend, Indiana	7355			
0800-0900	Voice of Indonesia, Jakarta	11753	11785		
0800-0900	Voice of Nigeria, Lagos	7255			
0815-0830	Radio Korea, Seoul	9570	13670		
0815-0900	S Italian Radio Relay Svc, Milan	9815			
0815-0900	A,S Radio New Zealand, Wellington	9855			
0830-0855	M-F Radio Netherlands Int'l, Hilversum	15190			
0830-0900	Radio Australia, Melbourne	9580	15240	17630	17750
		21525	21775		
0830-0900	Radio Netherlands Int'l, Hilversum	9630	17575	21485	
0830-0900	Radio Finland, Helsinki	21550	17800		
0830-0900	Swiss Radio International, Berne	9560	13685	17670	21695
0837-0841V	Radio Tikhyy Okean, Vladivostok	4485	5940	7210	7320
		9530	9635	9670	9780
		9820	9905	11815	11840
		11850	11915	12050	12070
		13605	15180	15410	15415
		15425	15530	15535	17590

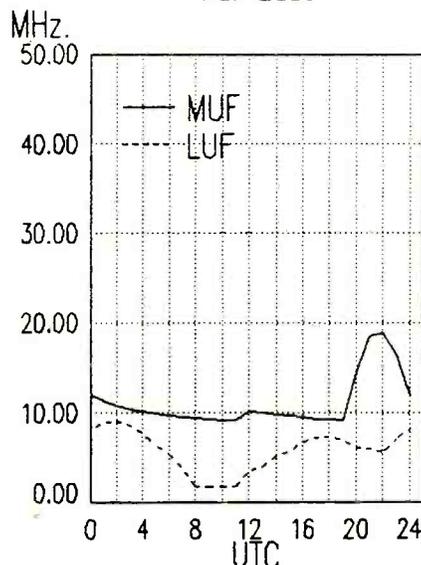
0800 UTC [3:00 AM EST/12:00 AM PST]

0800-0803	Radio Pakistan	17555	21575		
0800-0810	Sierra Leone Brdcstng Co., Freetown	3316			
0800-0825	Radio Netherlands Int'l, Hilversum	9630	15560		
0800-0825	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0800-0825	Radio Finland, Helsinki	17800	21550		
0800-0830	Radio Australia, Melbourne	13705	15160	15240	17630
		17750	17795	21525	21775
0800-0830	Voice of Islam, Dacca, Bangladesh	15195	11705		

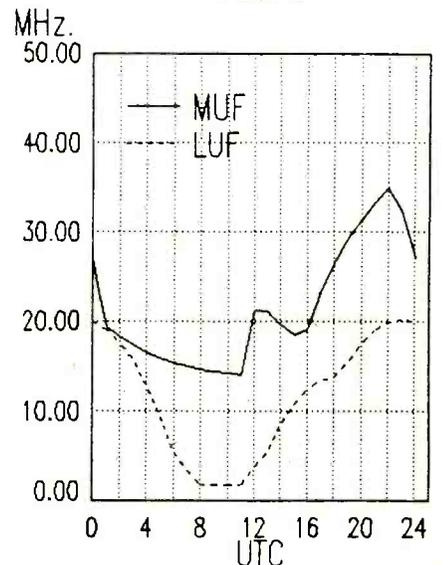
East Coast To
Australia



East Coast To
Far East



East Coast To
Pacific



frequency

section

		17605	17645	17695	17860
0840-0850	Voice of Greece, Athens	21505	21515		
0845-0900	KTWR, Agana, Guam	15625	17535		
		15210			

0900-1000	Voice of Nigeria, Lagos	7255			
0900-1000	WHRI, Noblesville, Indiana	7315	7355		
0910-0940	M,W,H,A,S Radio Ulan Bator, Mongolia	11850	12015		
0920-1000	ABC, Perth, Australia	6140			
0930-1000	Radio Afghanistan, Kabul	4940	9635	17655	21600
0930-0955	RRI Surabaya, Jawa Timur, Indonesia	2377			
0930-1000	Radio Australia, Melbourne	5995	9580	9655	9760
		17715	21775	21825	
0930-1000	British Forces Broadcasting Svc, UK	15205	17695	21735	
0930-1000	CBN, St. John's, New Foundland	6160			
0930-1000	KTWR, Agana, Guam	11805			

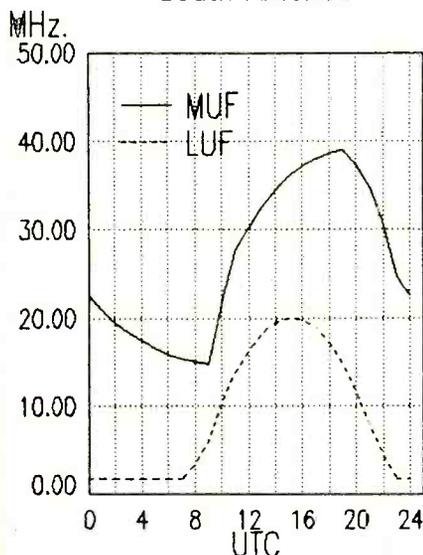
0900 UTC [4:00 AM EST/1:00 AM PST]

0900-0920	ABC, Perth, Australia	15425			
0900-0925	BRT Brussels, Belgium	9925			
0900-0925	Radio Netherlands Int'l, Hilversum	9630	17575	21485	
0900-0930	Radio Australia (Southwest Pacific)	6020	6035	6080	9710
0900-0930	Radio Australia, Melbourne	5995	9580	9760	17715
		21775	21825		
0900-0930	KTWR Agana Guam	15200			
0900-0945	S Italian Radio Relay Svc, Milan	9815			
0900-0950	Deutsche Welle, Koln, West Germany	6160	9565	11740	15410
		17780	17820	21600	21650
		21680			
0900-1000	ABC, Alice Springs, Australia	2310	(ML)		
0900-1000	Radio Beijing, China	11755	15440	17710	
0900-1000	ABC Brisbane, Australia	9660			
0900-1000	Solomon Islands Broadcasting Co.	5020			
0900-1000	Radio Moscow World Service	15280	17690	21690	21790
0900-1000	ABC, Katherine, Australia	2485			
0900-1000	ABC, Tennant Creek, Australia	2325	(ML)		
0900-1000	S Adventist World Radio, Portugal	9670			
0900-1000	A Radio for Peace Int., Costa Rica	7375	USB		
0900-1000	KTWR, Agana, Guam	11805			
0900-1000	Radio New Zealand, Wellington	9855			
0900-1000	S Radio Bhutan, Thimpu	5023v			
0900-1000	Voice of Hope, Lebanon	6280			
0900-1000	BBC World Service, London, England	5975	9740	11750	12095
		15070	15190	15360	15400
		17640	17705	17790	17885
		21470	21660	21715	
0900-1000	CFCF, Montreal, Quebec, Canada	6005			
0900-1000	CFCN, Calgary, Alberta, Canada	6030			
0900-1000	CHNS, Halifax, Nova Scotia, Canada	6130			
0900-1000	Christian Science World Svc, Boston	9455	9530	9840	11980
		13720	15610		
0900-1000	CKWX, Vancouver, British Columbia	6080			
0900-1000	CFRB, Toronto, Ontario, Canada	6070			
0900-1000	FEBC Radio Int'l, Philippines	11845			
0900-1000	HCJB, Quito, Ecuador	6130			
0900-1000	HCJB, Quito, Ecuador (all pro)	9745	11925		
0900-1000	Radio Japan Australian Svc., Tokyo	15270	17890		
0900-1000	Radio Japan General Service, Tokyo	11840	21610		

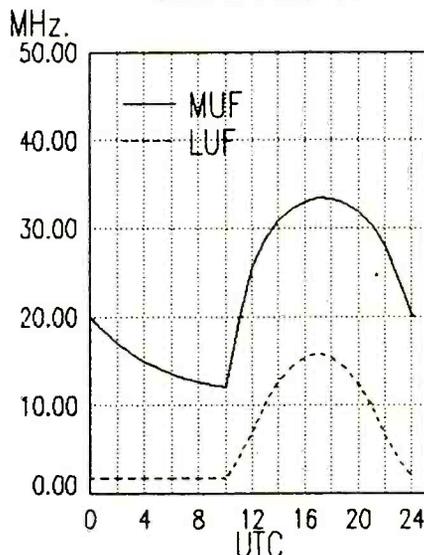
1000 UTC [5:00 AM EST/2:00 AM PST]

1000-1015	Radio Budapest, Hungary	15160	15220	11925	9835
		9585	6110		
1000-1025	BRT Brussels, Belgium	21810	26050		
1000-1030	Radio Afghanistan, Kabul	4940	9635	17655	21600
1000-1030	A Radio for Peace Int., Costa Rica	7375	USB		
1000-1030	Voice of Vietnam, Hanoi	9840	15010		
1000-1030	Swiss Radio International, Berne	9560	13685	17670	21695
1000-1030	Radio Australia, Melbourne	5995	9580	9655	17715
		21775			
1000-1100	Radio Korea, Seoul	15575			
1000-1100	KHBN Guam	9830	ML		
1000-1100	WHRI, South Bend, Indiana	7315	7355		
1000-1100	Radio Beijing, China	11755	15440	17710	
1000-1100	ABC, Alice Springs, Australia	2310	(ML)		
1000-1100	ABC, Katherine, Australia	2485			
1000-1100	Radio Baghdad, Iraq	11860			
1000-1100	Solomon Islands Broadcasting Co.	5020			
1000-1100	ABC, Perth, Australia	9610			
1000-1100	ABC, Tennant Creek, Australia	2325	(ML)		
1000-1100	KSDA, Guam	13720			
1000-1100	Radio Moscow World Service	11840	17690	21690	21790
1000-1100	All India Radio, New Delhi	15010	15335	17387	17865
		21735			
1000-1100	BBC World Service, London, England	9410	9740	9750	12095
		15070	15190	15360	15420
		17705	17790	17885	21660
1000-1100	CBN, St. John's, Nfld, Canada	6160			
1000-1100	CFCF, Montreal, Quebec, Canada	6005			
1000-1100	CFCN, Calgary, Alberta, Canada	6030			
1000-1100	CHNS, Halifax, Nova Scotia, Canada	6130			
1000-1100	Christian Science World Svc, Boston	9455	9495	9530	11980
		13625	13720	(+11705 A.S)	
1000-1100	CKWX, Vancouver, British Columbia	6080			

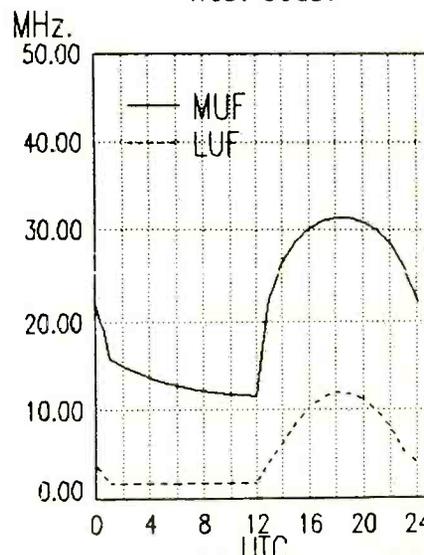
East Coast To South America



East Coast To Central America



East Coast To West Coast



East Coast

frequency

section

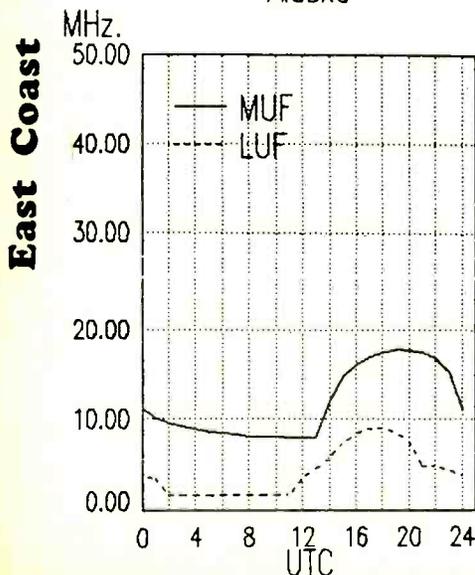
1000-1100	CFRB, Toronto, Ontario, Canada	6070		
1000-1100	FEBC Radio Int'l, Philippines	11845		
1000-1100	ABC Brisbane, Australia	9660		
1000-1100	WYFR, Okeechobee, Florida	5950		
1000-1100	HCJB, Quito, Ecuador	9745 11925		
1000-1100	KTWR, Agana, Guam	11805		
1000-1100	Voice of America-Caribbean Service	9590 11915 15120		
1000-1100	Voice of America-Pacific Service	5985 11720 15425		
1015-1030	Radio Korea, Seoul	7275 11740		
1015-1100	S Italian Radio Relay Svc, Milan	9815		
1030-1100	Radio Austria Int'l, Vienna	15450 21490		
1030-1100	M-A Vatican Radio	6248 9645 11740		
1030-1100	UAE Radio Dubai	15320 15435 17865 21605		
1030-1100	Radio Tanzania	5985 6105 7165		
1030-1100	Radio Korea, Seoul	11715		
1030-1100	Radio Netherlands Int'l, Hilversum	6020 11890		
1030-1100	Radio Australia, Melbourne	5995 9580 9655 21775		
1030-1100	Adventist World Radio, Forli, Italy	7230		
1030-1045	Radio Budapest, Hungary	15160 15220 11925 9835		
		9585 6110		
1040-1050	Voice of Greece, Athens	15625 17535		
1045-1100	Radio Budapest, Hungary	7220 9585 9835 11910		
1050-1100	Radio Finland, Helsinki	15400 21550		

1100 UTC [6:00 AM EST/3:00 AM PST]

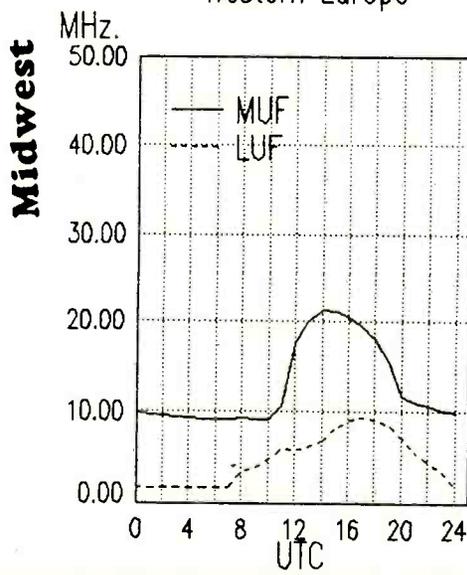
1100-1115	Azad Kashmir Radio, Pakistan	7268 4980 3665		
1100-1115	Radio Finland, Helsinki	15400 21550		
1100-1120	Radio Pakistan	17565 21520		
1100-1125	HCJB Quito, Ecuador	9745 11925		
1100-1125	Radio Netherlands Int'l, Hilversum	6020 11890		
1100-1130	Kol Israel, Jerusalem	17590 21660 21790		
1100-1130	Solomon Islands Broadcasting Co.	5020		
1100-1130	Radio Mozambique, Maputo	11835 11818 9525		
1100-1130	Voice of Vietnam, Hanoi	9840 15010		
1100-1130	Radio Australia, Melbourne	5995 6020 6035 6080		
		9580 9655 9710 11910		
		15465 21825		
1100-1130	Adventist World Radio, Forli, Italy	7230		
1100-1130	Swiss Radio International, Berne	13635 15570 17830 21770		
1100-1150	Radio Pyongyang, North Korea	9977 11735		
1100-1150	Deutsche Welle, Köln, West Germany	15410 17765 17800 21600		
1100-1200	ABC, Alice Springs, Australia	2310 (ML)		
1100-1200	BBC World Service, London, England	9410 9515 9740 9750		
		11775 12095 15070 15360		
		15420 17640 17705 17790		

1100-1200	Radio Baghdad, Iraq	11860		
1100-1200	WHRI, Noblesville, Indiana	9465 11790		
1100-1200	KHBN Guam	9830 ML		
1100-1200	A,S Radio Tanzania	5985 6105 7165		
1100-1200	All India Radio, Northeast Svc	7190		
1100-1200	WYFR, Okeechobee, Florida	5950 11580		
1100-1200	Adventist World Radio, Costa Rica	9725 11870		
1100-1200	Radio Moscow World Service	11840 17690 21690 21790		
1100-1200	CBC, Montreal	6160		
1100-1200	SBC Singapore	11940		
1100-1200	ABC, Brisbane, Australia	9660		
1100-1200	ABC, Katherine, Australia	2485		
1100-1200	ABC, Perth, Australia	9610		
1100-1200	ABC, Tennant Creek, Australia	2325 (ML)		
1100-1200	Trans World Radio, Bonaire	11815 15345		
1100-1200	CBN, St. John's, Newfoundland, Can	6160		
1100-1200	CFCF, Montreal, Quebec, Canada	6005		
1100-1200	CFCN, Calgary, Alberta, Canada	6030		
1100-1200	CHNS, Halifax, Nova Scotia, Canada	6130		
1100-1200	Christian Science World Svc, Boston	9455 9495 9530 11980		
		13625 13720 (+11705 A,S)		
1100-1200	CKWX, Vancouver, British Columbia	6080		
1100-1200	CFRB, Toronto, Ontario, Canada	6070		
1100-1200	Radio Japan, Tokyo	6120 11815 11840		
1100-1200	Radio Jordan, Amman	13655		
1100-1200	Radio RSA, Johannesburg	9555 11805 11900 17835		
1100-1200	Voice of America-Caribbean Service	9590 11915		
1100-1200	Voice of America-East Asia Service	5985 6110 9760 11720		
		15155 15425		
1110-1120	m-F Radio Botswana	4830 5995 7255		
1115-1145	Radio Nepal, Katmandu (External Svc.)	5005		
1115-1200	Radio Korea, Seoul	9750		
1130-1140	Radio Lesotho	4800		
1130-1145	RRI Yogyakarta, Yogyakarta, Indonesia	5046		
1130-1145	Radio Budapest, Hungary	15190 6110 9835 15160		
		15220		
1130-1200	HCJB, Quito, Ecuador	11740 17890		
1130-1200	Radio Australia, Melbourne	5995 6020 6035 6080		
		9580 9710 11720 11910		
		15465 21825		
1130-1200	Radio Thailand	11905 9655 4830		
1130-1200	Radio Austria International, Vienna	6155 13730 15430 21490		
1130-1200	Radio Netherlands Int'l, Hilversum	5995 6020 9715 11660		
		17575 21480 21520		
1130-1200	Voice of Islamic Republic of Iran	9575 9705 11715 11790		
		11825		

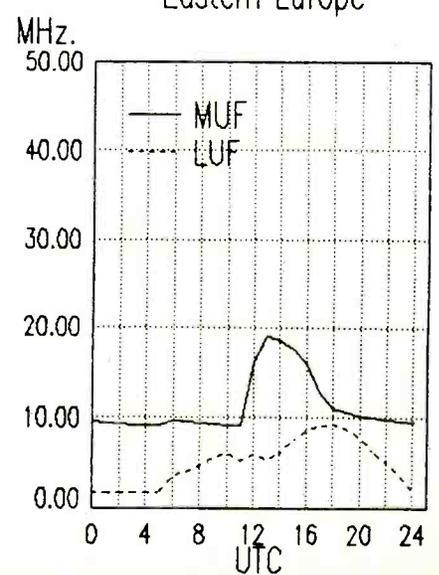
East Coast To
Alaska



Midwest To
Western Europe



Midwest To
Eastern Europe



frequency

section

1200 UTC [7:00 AM EST/4:00 AM PST]

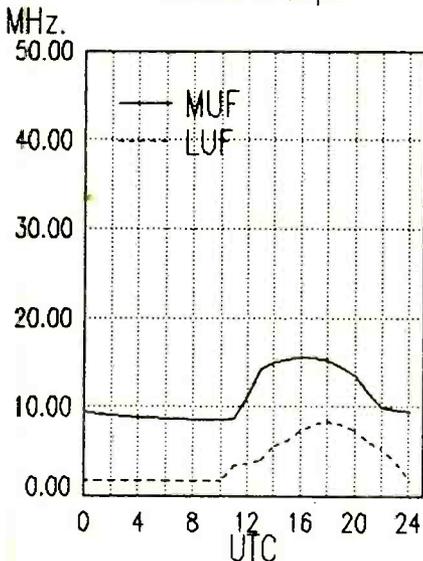
1200-1215	Radio Korea, Seoul	9750			
1200-1225	All India Radio Northeast Svc	7190	ML		
1200-1225	Radio Netherlands Int'l, Hilversum	5955	6020	9715	11660
		17575	21480	21520	
1200-1225	Voice of Islamic Republic of Iran	9575	9705	11715	11790
		11825			
1200-1225	M-F Radio Finland, Helsinki	15400	21550		
1200-1230	Vatican Radio, Vatican City	17865	21515		
1200-1230	Radio Romania Int'l, Bucharest	15380	17720		
1200-1230	Radio Thailand	11905	9655	4830	
1200-1230	M,W,H,A,S Radio Ulan Bator, Mongolia	11850	12025		
1200-1230	A,S Radio Norway International, Oslo	21735	25730		
1200-1230	Radio Tashkent, Uzbekistan	7325	9715	11785	15460
		17740			
1200-1230	Radio Australia, Melbourne	5995	6020	6035	6080
		9580	9710	11720	11910
		15465	21825		
1200-1300	ABC, Alice Springs, Australia	2310	(ML)		
1200-1300	WWCR Nashville, Tennessee	15690			
1200-1300	ABC, Brisbane, Australia	9660			
1200-1300	SBC Singapore	11940			
1200-1300	ABC, Katherine, Australia	2485			
1200-1300	ABC, Perth, Australia	9610			
1200-1300	Trans World Radio, Bonaire	11815	15345		
1200-1300	ABC, Tennant Creek, Australia	2325	(ML)		
1200-1300	Adventist World Radio, Costa Rica	9725	11870		
1200-1300	BBC World Service, London, England	5965	6195	9515	9740
		11775	12095	15070	17640
		17705	17790	17885	21470
		21660	21710		
1200-1300	Radio Bras, Brasilia	11745			
1200-1300	CBU, Vancouver, British Columbia	6160			
1200-1300	CFCF, Montreal, Quebec, Canada	6005			
1200-1300	CFCN, Calgary, Alberta, Canada	6030			
1200-1300	CHNS, Halifax, Nova Scotia, Canada	6130			
1200-1300	A,S Radio Tanzania	5985	6105	7165	
1200-1300	KHBN Guam	9830	ML		
1200-1300	Christian Science World Service	9495	9895	11930	11980
		13625	13720	(+21780 A,S)	
1200-1300	CKWX, Vancouver, British Columbia	6080			
1200-1300	Radio Moscow World Service	11840	17690	21690	21790
1200-1300	CFRB, Toronto, Ontario	6070			
1200-1300	HCJB, Quito, Ecuador	11740	17890	25950	USB
1200-1300	Radio Beijing, China	9530	11600	11660	15450
		17855			
1200-1300	Radio Jordan, Amman	13655			

1200-1300	Voice of America-East Asia Service	6110	9760	11715	15155
		15425	9530		
1200-1300	WHRI, Noblesville, Indiana	9465	11790		
1200-1300	WYFR, Okeechobee, Florida	5950	6015	11580	17750
1215-1225	Radio Bayrak, Northern Cyprus	6150			
1225-1300	All India Radio Northeast Svc	3255	ML		
1230-1245	Radio Korea, Seoul	7275	11740		
1230-1300	S Italian Radio Relay Svc, Milan	9815	(ML)		
1230-1300	Radio Bangladesh, Dacca	15195	17817		
1230-1300	Radio France International, Paris	9805	11670	15155	15195
		17650	21635	21645	
1230-1300	Radio Australia, Melbourne	5995	6020	6035	6080
		9580	11720	11910	15465
1230-1300	Radio Sweden, Stockholm	15190	21570	17740	
1235-1245	Voice of Greece, Athens	15625	15650	17535	

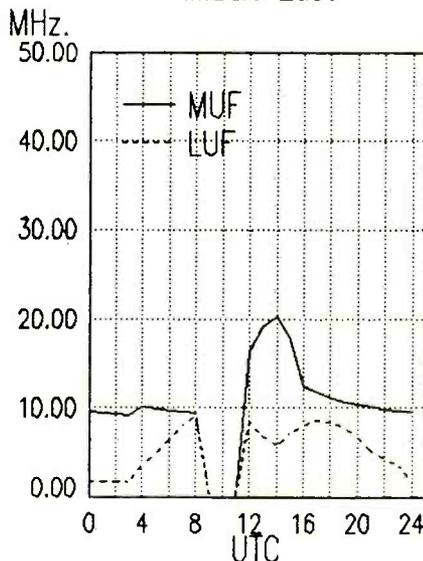
1300 UTC [8:00 AM EST/5:00 AM PST]

1300-1315	Radio Jordan, Amman	13655			
1300-1325	Radio Finland, Helsinki	15400	21550		
1300-1330	Radio Yugoslavia, Belgrade	17740	21555	25795	
1300-1330	Radio Tirana, Albania	11855	9500		
1300-1330	A,S Radio Norway International, Oslo	9585	9590		
1300-1330	Radio Australia, Melbourne	5995	6020	6035	6080
		9580	11720	11910	15465
		21825			
1300-1330	S Trans World Radio, Bonaire	15345	11815		
1300-1330	Radio Canada Int'l (China relay)	11955	15210		
1300-1330	Swiss Radio Int'l European Service	3985	6165	9535	
1300-1350	Radio Pyongyang, North Korea	9325	9345		
1300-1400	S Italian Radio Relay Svc, Milan	9815			
1300-1400	M-F Radio Canada Int'l, Montreal	9635	11855	17820	
1300-1400	BBC World Service, London, England	5965	6195	9515	9740
		11775	12095	15070	17640
		17705	17790	17885	21470
		21660	21710		
1300-1400	ABC, Alice Springs, Australia	2310			
1300-1400	ABC, Brisbane, Australia	9660			
1300-1400	A,S Radio Tanzania	5985	6105	7165	
1300-1400	KHBN Guam	9830	ML		
1300-1400	All India Radio Northeast Svc	3255	ML		
1300-1400	Radio Korea, Seoul	9570			
1300-1400	Radio Australia Middle East Svc	17630	21775		
1300-1400	ABC, Katherine, Australia	2485			
1300-1400	ABC, Perth, Australia	9610			
1300-1400	ABC, Tennant Creek, Australia	2325	(ML)		
1300-1400	Adventist World Radio, Costa Rica	9725	11870		

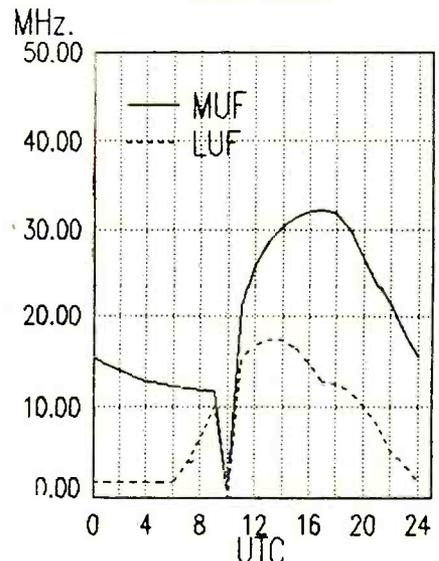
Midwest To Arctic Europe



Midwest To Middle East



Midwest To West Africa



Midwest

frequency

section

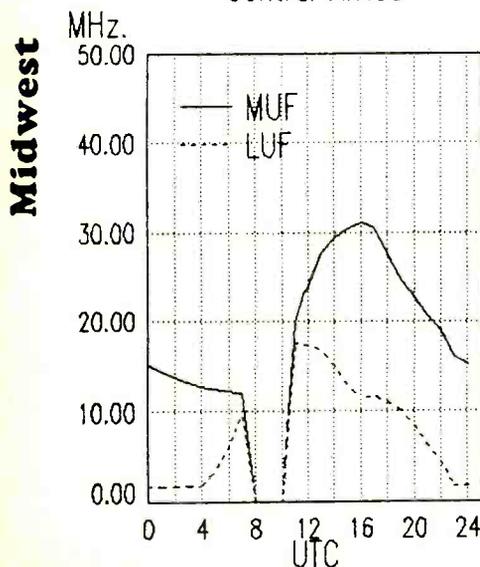
1300-1400	CBC Northern Quebec Service, Can	9625			
1300-1400	CBN, St. John's, Newfoundland	6160			
1300-1400	CBU, Vancouver, British Columbia	6160			
1300-1400	CFCF, Montreal, Quebec, Canada	6005			
1300-1400	CFCN, Calgary, Alberta, Canada	6030			
1300-1400	CHNS, Halifax, Nova Scotia, Canada	6130			
1300-1400	Christian Science World Service	9495	9650	9895	11930
		11980	13625	(+21780 A,S)	
1300-1400	CKWX, Vancouver, British Columbia	6080			
1300-1400	CFRB, Toronto, Ontario, Canada	6070			
1300-1400	Radio Moscow World Service	11840	17690	21690	21790
1300-1400	FEBC Radio Int'l, Philippines	11850			
1300-1400	HCJB, Quito, Ecuador	11740	17890	25950	USB
1300-1400	Radio Beijing, China	9530	11600	11660	11850
1300-1400	Radio Romania Int'l, Bucharest	11940	15365	17850	21665
1300-1400	Voice of America-East Asia Service	6110	9760	11715	15155
		15425			
1300-1400	WHRI, Noblesville, Indiana	9465	11790		
1300-1400	WWCR, Nashville, Tennessee	15690			
1300-1400	WYFR, Okeechobee, Florida	5950	6015	11550	11580
		13695	17750		
1315-1400	Radio Jordan, Amman	9560			
1315-1400	Radio Tikhiv Okean, Vladivostok	5015			
1330-1400	All India Radio, New Delhi	11760	9565		
1330-1400	Radio Austria International, Vienna	15430			
1330-1345 A,S	Radio Finland, Helsinki	21550	15400		
1330-1400	Radio Australia, Melbourne	5995	6020	6035	6080
		9580			
1330-1400	Laotian National Radio	7116v			
1330-1400 A	Trans World Radio, Bonaire	11815	15345		
1330-1400	Voice of Turkey, Ankara	17785			
1330-1400 M-SBRT	Brussels, Belgium	21820			
1330-1400 M-FBRT	Brussels, Belgium	21815			
1330-1400	All India Radio, New Delhi	9565	11760	15335	
1330-1400	British Forces Broadcasting Svc, UK	15195	17695	21735	
1330-1400	Radio Tashkent, Uzbekistan	7325	9715	11785	15460
		17740			
1330-1400	Swiss Radio International, Berne	9620	11695	15570	17830
		21695	25680		
1330-1400	UAE Radio, Dubai	15435	17865	21605	
1330-1400	Voice of Vietnam, Hanoi	9840	12020	15010	
1345-1400	Vatican Radio	7250	9645	11740	

1400-1430	Radio Australia, Melbourne	5995	6020	6035	6060
		6080	7215	9580	
1400-1430	ABC, Tennant Creek, Australia	2325	(ML)		
1400-1430	Swiss Radio Int'l, Berne	6165	9535	12030	
1400-1430	Radio Juba, Sudan	9540/9550			
1400-1430	Radio France International, Paris	11925	21780		
1400-1430	Radio Polonia, Warsaw, Poland	6095	7285		
1400-1430	Radio Sweden, Stockholm	11905	17740		
1400-1430	Radio Tirana, Albania	9500	11895		
1400-1500	ABC, Brisbane, Australia	9660			
1400-1500 S	Radio Canada Int'l, Montreal	11955	17820		
1400-1500	Radio Sta. Peace & Progress, Moscow	11870	15180	17635	17805
	(from 1330 add:	15435	15480	15560	17835)
1400-1500	Voice of the Mediterranean, Malta	11925			
1400-1500	Radio Beijing, China	11815	11850	15165	
1400-1400	Radio Jordan, Amman	9560			
1400-1500	ABC, Katherine, Australia	2485			
1400-1500	ABC, Perth, Australia	9610			
1400-1500	All India Radio, New Delhi	9565	11760	15335	
1400-1500	BBC World Service, London, England	9410	11750	12095	15070
		17640	17705	17790	17880
1400-1500	CBC Northern Quebec Service, Can	9625			
1400-1500	CBN, St. John's, Newfoundland	6160			
1400-1500	KHBN Guam	9830	ML		
1400-1500 A,S	Radio Tanzania	5985	6105	7165	
1400-1500	All India Radio Northeast Svc	3255	ML		
1400-1500	Radio Australia Middle East Svc	17630	21775		
1400-1500 M-A	CBU, Vancouver, British Columbia	6160			
1400-1500	CFCF, Montreal, Quebec, Canada	6005			
1400-1500	CFCN, Calgary, Alberta, Canada	6030			
1400-1500	CHNS, Halifax, Nova Scotia, Canada	6130			
1400-1500	Christian Science World Service	9530	11980	13625	13720
		21780	(+ 15610 A,S)		
1400-1500	CKWX, Vancouver, British Columbia	6080			
1400-1500	CFRB, Toronto, Ontario	6070			
1400-1500	FEBC Radio Int'l, Philippines	11850			
1400-1500	HCJB, Quito, Ecuador	11740	17890	25950	USB
1400-1500	Radio Japan General Service, Tokyo	11815	11865		
1400-1500	Radio Moscow World Service	11840	17690	21690	21790
1400-1500	Radio RSA, Johannesburg	9555	11925	17835	
1400-1500	Voice of America-East Asia Service	6110	9760	15155	15425
1400-1500	Voice of America-South Asia Service	7125	9645	9760	15205
		15395			
1400-1500	Voice of Nigeria, Lagos	7255			
1400-1500	WHRI, Noblesville, Indiana	9465	15105		
1400-1500	WWCR, Nashville, Tennessee	15690			
1400-1500	WYFR, Okeechobee, Florida	5950	6015	11580	13695
		17750			

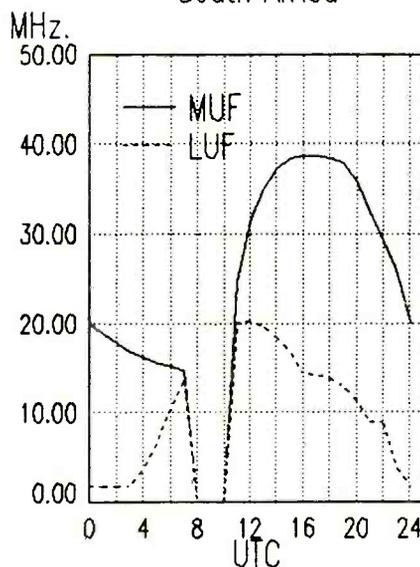
1400 UTC [9:00 AM EST/6:00 AM PST]

1400-1415	Azad Kashmir Radio, Pakistan	7268	4980	3665	
1400-1430	ABC, Alice Springs, Australia	2310	(ML)		

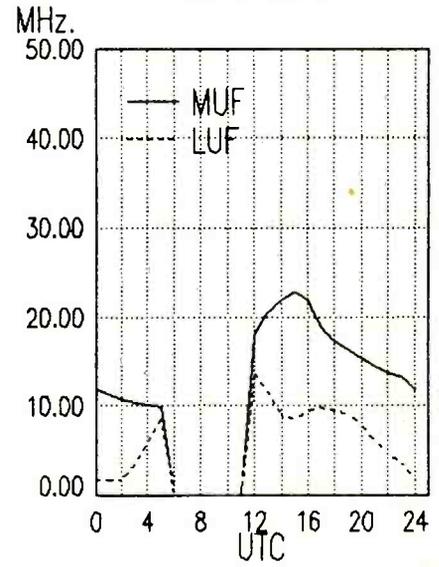
Midwest To
Central Africa



Midwest To
South Africa



Midwest To
East Africa



frequency

section

1405-1500	WYFR, Taiwan	11550			
1405-1430	Radio Finland, Helsinki	15185	21550	11820	
1415-1500	M-A Radio Bhutan	5023v			
1415-1425	Radio Nepal, Katmandu	5005	7165	(alt. 3230)	
1430-1500	Voice of Hope, Lebanon	6280			
1430-1500	Voice of Myanmar (Burma)	5990v			
1430-1500	Radio Australia, Melbourne	5995	6020	6036	6060
		6080	7215	9580	9710
		9770	11800	13745	
1430-1500	F ABC, Alice Springs, Australia	2310	(ML)		
1430-1500	F ABC, Tennant Creek, Australia	2325	(ML)		
1430-1500	Radio Austria International, Vienna	6155	11780	13730	21490
1430-1500	Radio Netherlands Int'l, Hilversum	5995	13770	15150	17575
		17605			
		7275			
1445-1500	Radio Korea, Seoul	9795	13780		
1445-1500	M,W,H,A,S Radio Ulan Bator, Mongolia				

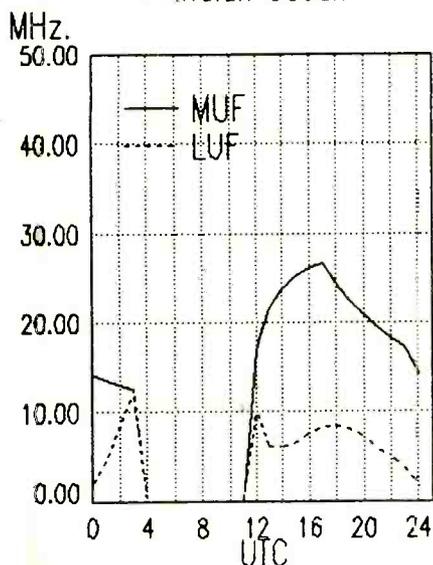
1500-1600	CBC Northern Quebec Service, Can	9625	(ML)		
1500-1600	CBN, St. John's, Newfoundland	6160			
1500-1600	CBU, Vancouver, British Columbia	6160			
1500-1600	CFCF, Montreal, Quebec, Canada	6005			
1500-1600	CFCN, Calgary, Alberta, Canada	6030			
1500-1600	CHNS, Halifax, Nova Scotia, Canada	6130			
1500-1600	Christian Science World Service	9530	11980	13625	13720
		21780	(+15610 A,S)		
1500-1600	CKWX, Vancouver, British Columbia	6080			
1500-1600	CFRB, Toronto, Ontario	6070			
1500-1600	FEBC Radio Int'l, Philippines	11850			
1500-1600	HCJB, Quito, Ecuador	11740	17890	25950	USB
1500-1600	T-S KNLS, Anchor Point, Alaska	11715	(or 9750)		
1500-1600	KTWR, Agana, Guam	11650			
1500-1600	KUSW, Salt Lake City, Utah	15590			
1500-1600	Radio Australia, Melbourne	5995	6020	6035	6060
		6080	7215	9580	9710
		9770	11800	13745	

1500 UTC [10:00 AM EST/7:00 AM PST]

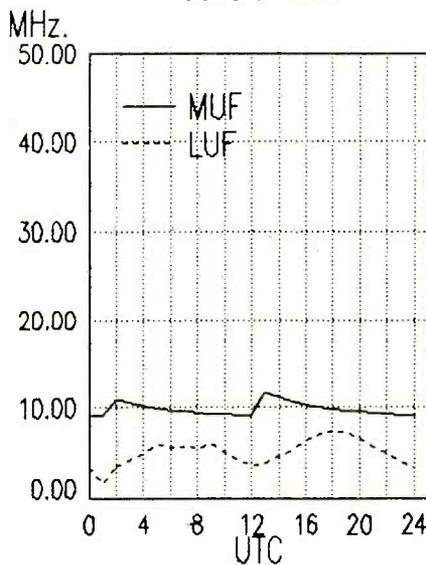
1530-1600	Radio Sofia, Bulgaria	11680	15310	17825	
1500-1515	M,W,H,A,S Radio Ulan Bator, Mongolia	9795	13780		
1500-1515	WYFR, Taiwan	11550			
1500-1525	Radio Netherlands Int'l, Hilversum	5955	13770	15150	17575
		17605			
1500-1530	M-A Vatican Radio, Vatican City	6248	7250	9645	11740
		ML			
1500-1530	A,S Radio Tanzania	5985	6105	7165	
1500-1530	Radio Sweden, Stockholm	17740	11905		
1500-1530	Radio Romania Inter'l, Bucharest	11775	11940	15250	15335
		17720	17745		
1500-1540	FEBA, Seychelles	11865			
1500-1550	Radio Pyongyang, North Korea	9325	9640	9977	11760
1500-1550	Deutsche Welle, Köln, W. Germany	9735	11965	17765	21600
1500-1555	Radio Beijing, China	11815	15165		
1500-1600	Radio Jordan, Amman	9560			
1500-1600	S Radio Canada Int'l, Montreal	11955	17820		
1500-1600	FEBA, Seychelles	9590	15330		
1500-1600	Voice of the Mediterranean, Malta	11925			
1500-1600	Voice of Hope, Lebanon	6280			
1500-1600	F ABC, Alice Springs, Australia	2310	(ML)		
1500-1600	ABC, Perth, Australia	9610			
1500-1600	F ABC, Tennant Creek, Australia	2325	(ML)		
1500-1600	BBC World Service, London, England	9410	11750	11775	12095
		15070	15260	17640	17705
		17780	21470	21660	21710
1500-1600	Voice of Myanmar (Burma)	5990v			
1500-1600	S Radio Canada Int'l, Montreal	11955	17820		

1500-1600	Radio Japan General Service, Tokyo	11865	21700		
1500-1600	Radio Moscow World Service	11840	17670	21690	21790
1500-1600	Radio RSA, Johannesburg S. Africa	7230	15270		
1500-1600	Voice of America-Middle East Service	9700	15205	15260	21530
1500-1600	Voice of America-South Asia Service	6110	7125	9645	9700
		9760	15205	15260	9350
1500-1600	Voice of Nigeria, Lagos	7255			
1500-1600	All India Radio Northeast Svcs	3255	ML		
1500-1600	KHBN Guam	9830	ML		
1500-1600	Radio Korea, Seoul	5975	9870		
1500-1600	WHRI, Noblesville, Indiana	15105	(+ 9465 M-F, + 21840 A,S)		
1500-1600	WWCR, Nashville, Tennessee	15690			
1500-1600	WYFR, Okeechobee, Florida	5950	11830	13695	11580
		17750			
1515-1530	RCI European News Svc, Montreal	9555	11915	11935	15325
		21545	(M-A add: 13650 15315 17820)		
1530-1540	M-A Voice of Greece, Athens	11645	15625	17535	
1530-1600	Radio Tirana, Albania	11835	9500		
1530-1600	Radio Tanzania	5985	6105	7165	9684
1530-1600	Radio Omdurman, Sudan	11635	9550/9540		
1530-1600	Radio Sweden, Stockholm	17880	21500	21655	
1530-1600	Swiss Radio International, Berne	13685	15430	17830	21630
1540-1555	M-A FEBA, Seychelles	11865			
1545-1600	Radio Pakistan	21740	21480	17895	17580
		15605	13665		
1545-1600	Vatican Radio, Vatican City	11715	15090	17870	
1555-1600	M-A FEBA, Seychelles	11865			

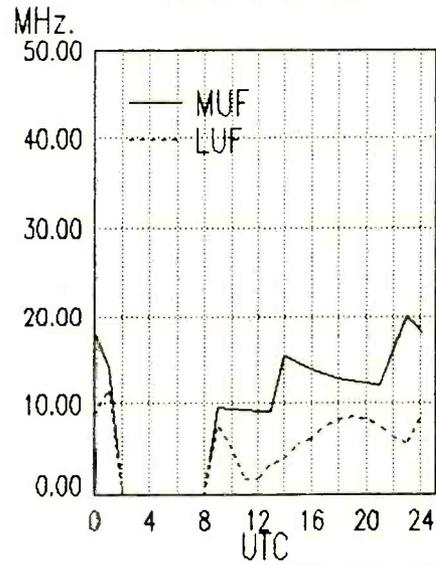
Midwest To
Indian Ocean



Midwest To
Central Asia



Midwest To
South East Asia



Midwest

frequency

section

1600 UTC [11:00 AM EST/8:00 AM PST]

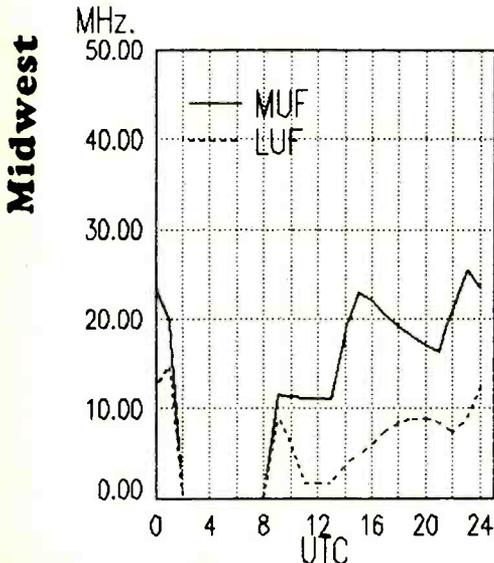
1600-1610	Radio Lesotho	4800			
1600-1610	M,A FEBA, Mahe, Seychelles	11865			
1600-1610	Vatican Radio, Vatican City	6248	7250	9645	11740
1600-1615	Radio Tanzania	5985	6105	7165	9684
1600-1615	Azad Kashmir Radio, Pakistan	7268	4980	3665	
1600-1630	Radio Sofia, Bulgaria	11680	15310	17825	
1600-1630	All India Radio Northeastern Svcs	3255	ML		
1600-1630	Radio Pakistan	7287	13665	15605	17554
		21670			
1600-1630	A,S Radio Norway International, Oslo	15220	25730		
1600-1630	Radio Polonia, Warsaw, Poland	6135	9540		
1600-1630	M-F Radio Portugal, Lisbon	21530			
1600-1630	Radio Jordan, Amman	9560			
1600-1630	Voice of Vietnam, Hanoi	9840	15010	12020	
1600-1640	UAE Radio, Dubai	11795	15320	15435	21605
1600-1650	Deutsche Welle, Koin, W. Germany	6170	7225	15105	15595
		17825	21680		
1600-1700	KSDA, Guam	11980			
1600-1700	Radio Baghdad, Iraq	11860			
1600-1700	F ABC, Alice Springs, Australia	2310	(ML)		
1600-1700	BBC World Service, London, England	9410	11775	12095	15070
		15260	17640	17705	21660
1600-1700	Radio Australia, Melbourne	5995	6020	6035	6080
		7215	9580	9710	9770
		11800	13745		
		(+ 6060 until 1630)			
1600-1700	ABC, Perth, Australia	9610			
1600-1700	F ABC, Tennant Creek, Australia	2325	(ML)		
1600-1700	CBC Northern Quebec Service, Can	9625	(ML)		
1600-1700	CBN, St. John's, Newfoundland	6160			
1600-1700	S Radio Canada Int'l, Montreal	11955	17820		
1600-1700	Radio Moscow World Service	7110	9655	9840	11630
		11890	12005	12010	12015
		15375	15540	17600	17670
		17710	21585	21630	21740
		(+11840 via Cuba)			
1600-1700	CBU, Vancouver, British Columbia	6160			
1600-1700	CFCF, Montreal, Quebec, Canada	6005			
1600-1700	CFCN, Calgary, Alberta, Canada	6030			
1600-1700	CHNS, Halifax, Nova Scotia, Canada	6130			
1600-1700	Christian Science World Service	9530	13625	13745	21640
1600-1700	CKWX, Vancouver, British Columbia	6080			
1600-1700	CFRB, Toronto, Ontario	6070			
1600-1700	KTWR, Agana, Guam	11650	11910	13720	
1600-1700	KUSW, Salt Lake City, Utah	15590			

1600-1700	Radio Beijing, China	9570	15110	15130	
1600-1700	Radio France International, Paris	6175	11705	12015	15360
		17620	17795	17845	17850
1600-1700	Trans World Radio-Swaziland	15135			
1600-1700	Voice of America-Africa Service	7195	9575	11920	15410
		15445	15580	15600	17785
		17800	17870		
1600-1700	Voice of America-Middle East Service	3980	9700	15205	15260
1600-1700	Voice of America-Asia Service	7125	9645	9700	9760
		15205	15260	15395	
1600-1700	Radio RSA, Johannesburg	7230	15270		
1600-1700	Voice of Nigeria, Lagos	7255			
1600-1700	WHRI, Noblesville, Indiana	9465(M-F)	13760(M-A)		
		15105(S)	21840(A,S)		
1600-1700	WINB, Red Lion, Pennsylvania	15295			
1600-1700	WRNO New Orleans, Louisiana	15420			
1600-1700	WWCR, Nashville, Tennessee	15690			
1600-1700	WYFR, Okeechobee, Florida	11830	13695	17750	15566
		11580	17612	21525	21615
1610-1620	M-F Radio Botswana	3356	4830	7255	
1610-1625	M FEBA, Mahe, Seychelles	11865			
1615-1620	Vatican Radio, Vatican City	9645	11740		
1615-1630	Radio Korea, Seoul, South Korea	9870			
1615-1630	Radio Budapest, Hungary	15160	15220	11910	9835
		9585	7220		
1630-1655	M-ABRT Brussels, Belgium	17580	21810		
1630-1700	Radio Netherlands, Hilversum	15570	6020		
1630-1700	Radio Austria Int'l, Vienna	11780	13730	21490	
1645-1700	M-F Radio Botswana	3356	4830	7255	
1650-1700	Radio New Zealand, Wellington	15485			

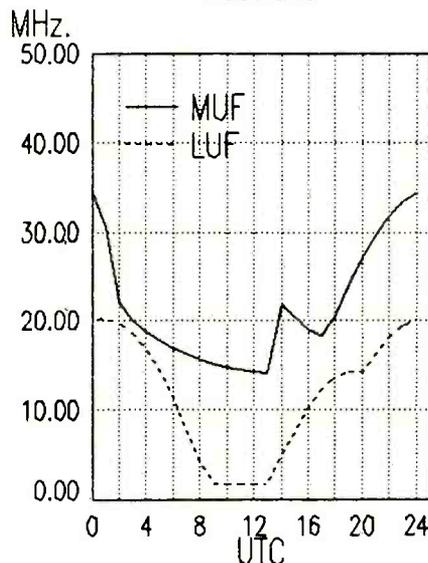
1700 UTC [12:00 PM EST/9:00 AM PST]

1700-1725	Radio Netherlands, Hilversum	15570	6020		
1700-1730	Radio Prague Int'l, Czechoslovakia	5930	6055	7345	11990
1700-1730	Radio Sweden, Stockholm	6065	9615		
1700-1730	A,S Radio Norway	9655			
1700-1750	Radio Pyongyang, North Korea	9325	9640	9977	11760
1700-1750	Radio Bras, Brazil	15265			
1700-1800	ELWA, Monrovia, Liberia	11800			
1700-1800	Radio Beijing, China	9570	11575	15225	
1700-1800	Radio Australia, Melbourne	5995	6020	6035	6080
		7215	7240	9580	9710
		9770	11855		
1700-1800	BBC World Service, London	9410	11775	12095	15070
		15260	15310	15400	17640
		17695	21470	21660	

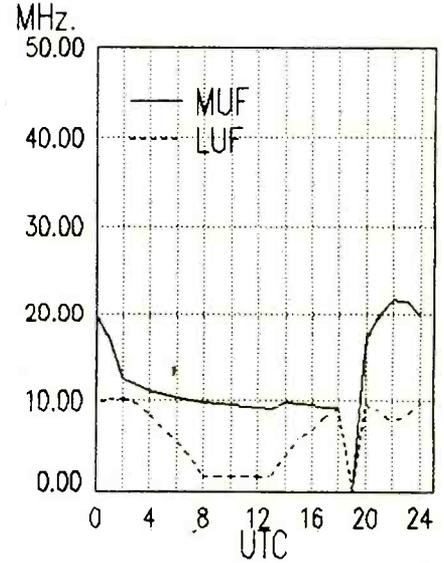
Midwest To Indonesia



Midwest To Australia



Midwest To Far East



frequency

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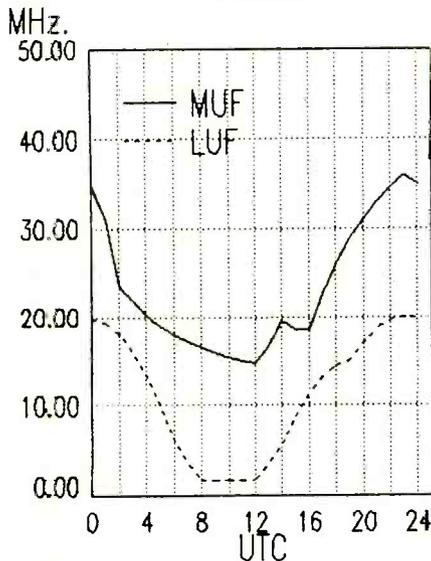
1700-1800	Radio Korea, Seoul	15575			
1700-1800	Voice of America-Africa Service	7195	9575	11920	15410
		15445	15580	15600	17785
		17800	17870		
1700-1800	Radio Moscow World Service	11840	12010	12015	15150
		15265	17585	17600	17670
		17695	21585	25375	
		(+11840 via Cuba)			
		9465			
1700-1800	S-F WMLK Bethel, PA	3980	6040	9700	9760
1700-1800	Voice of America-Middle East Service	11760	15205	15260	
1700-1300	Voice of America-South Asia Service	7125	9645	9700	15395
1700-1800	WHRI, Noblesville, Indiana	13760	15105		
1700-1800	Radio RSA, Johannesburg	7230	15270	17790	
1700-1300	Christian Science World Service	13625	21640		
		(+17555 & 15610 A.S)			
		15485			
1700-1800	Radio New Zealand, Wellington	11860			
1700-1800	Radio Baghdad, Iraq	11690	11745	11775	11850
1700-1800	Radio Moscow Africa Service	11960	15230	15330	15415
		15535	15585	17565	17570
		17595	17615	17655	21565
		21630	21715		
		9625 (ML)			
1700-1800	CBC, Montreal	17750 (ML)			
1700-1800	Radio Surinam Int'l (via Brazil)	9695	11815	11865	
1700-1800	Radio Japan, Tokyo	9325	9640	9977	11760
1700-1800	Radio Pyongyang, North Korea	15590			
1700-1800	KUSW Salt Lake City, Utah	15295			
1700-1800	WINB, Red Lion, Pennsylvania	15420			
1700-1800	WRNO, New Orleans, Louisiana	15690			
1700-1800	WWCR, Nashville, Tennessee	11830	13695	15440	17750
1700-1800	WYFR, Okeechobee, Florida	17885	21615		
		5995	7235	13650	15325
1715-1730	Radio Canada Int'l, Montreal	17820	21545		
		11570	15605		
1715-1800	Radio Pakistan	6150			
1730-1740	Radio Bayrak, Northern Cyprus	11695	5910		
1730-1755	BRT Brussels, Belgium	6110	9705	11695	11745
1730-1800	Radio Sta. Peace & Progress, USSR	11775	11850	11910	11980
		12055	12065	15330	15480
		15585	17565	17615	17635
		17655	21715		
		11680	15310	17825	
1730-1800	Radio Sofia, Bulgaria	9535			
1730-1800	Swiss Radio Int'l, Berne	17710	17730	21650	
1730-1800	Vatican Radio African Service	5015			
1730-1800	Radio Truth				
	(Clandestine intended for Zimbabwe)				

1730-1800	Radio Tirana, Albania	7155	9480
1730-1800	Radio Romania Int'l, Bucharest	15340	15365 17805 17860

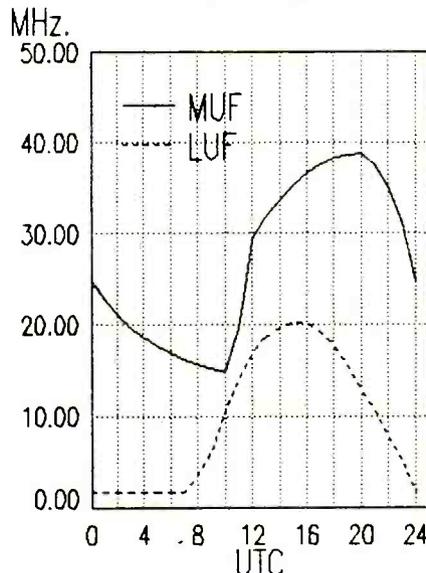
1800 UTC [1:00 PM EST/10:00 AM PST]

1800-1815	Kol Israel	11585	11655
1800-1830	Radio Canada Int'l, Montreal	13670	15260 17820
1800-1830	A.S. Radio Norway International, Oslo	17755	
1800-1830	Voice of Ethiopia, Addis Ababa	9660	
1800-1830	Radio Sweden, Stockholm	6065	7265
1800-1830	Voice of Vietnam, Hanoi	15010	12010 9840
1800-1845	Trans World Radio, Swaziland	15210	
1800-1845	All India Radio, New Delhi	11935	15360
1800-1855	Radio Mozambique, Maputo	9618	4855 3265
1800-1900	F ABC, Alice Springs, Australia	2310 (ML)	
1800-1900	F ABC, Tennant Creek, Australia	2325 (ML)	
1800-1900v	Radio Tanzania	5985	6105 7165 9684
1088v-1900	SLBC World Service, Sri Lanka	9720	15120
1800-1900	KVOH, Rancho Simi, California	17775	
1800-1900	BBC World Service, London	9410	12095 15070 17640
1800-1900	Radio Australia, Melbourne	5995	6020 6035 6080
		7205	7215 7240 9580
		11855	
1800-1900	Radio Moscow World Service	11765	11840 11890 13605
		15185	15375 15540 17585
		17670	17695 21740
1800-1900	Radio New Zealand, Wellington	15485	
1800-1900	CBN, St. John's, Newfoundland	6160	
1800-1900	CBU, Vancouver, British Columbia	6160	
1800-1900	CFCF, Montreal, Quebec, Canada	6005	
1800-1900	CFCN, Calgary, Alberta, Canada	6030	
1800-1900	CHNS, Halifax, Nova Scotia, Canada	6130	
1800-1900	Christian Science World Service	11650	13625 21640
		(+21780 M-F)	
		(+15610 A.S)	
1800-1900	CKWX, Vancouver, British Columbia	6080	
1800-1900	CFRB, Toronto, Ontario	6070	
1800-1900	KUSW, Salt Lake City, Utah	15590	
1800-1900	CBC Montreal	9625	
1800-1900	S-F WMLK Bethel, Pennsylvania	9465	
1800-1900	Radio RSA, Johannesburg, S. Africa	17765	15270 7230
1800-1900	A.S. Radio for Peace Int'l, Costa Rica	13630	21566
1800-1900	Voice of America-Africa Service	7195	9575 11920 15410
		15445	15580 15600 17785
		17800	17870 21485
1800-1900	Voice of America-Middle East Service	6040	9700 9760 11760
		15205	

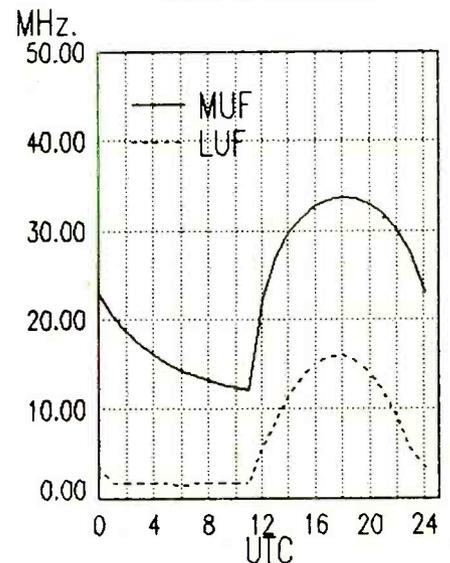
Midwest To Pacific



Midwest To South America



Midwest To Central America



Midwest

frequency

section

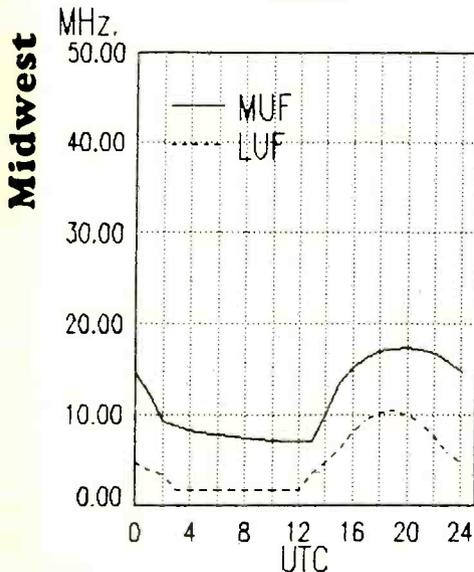
1800-1900	WHRI, Noblesville, Indiana	13760	17830
1800-1900	Radio Havana Cuba	15345	
1800-1900	WINB, Red Lion, Pennsylvania	15295	
1800-1900	WRNO, New Orleans, Louisiana	15420	
1800-1900	WWCR, Nashville, Tennessee	15690	
1800-1900	WYFR, Okeechobee, Florida	11830	13695 15440 17885
		21500	
1815-1900	Radio Bangladesh, Dacca	12032	15255
1830-1845	Radio Prague Int'l, Czechoslovakia	6055	7345
1830-1845	Radio Finland, Helsinki	11755	9550 6120
1830-1855	BRT Brussels, Belgium	5910	11695 13675
1830-1855	Radio Polonia, Warsaw, Poland	5995	6135 7125 7285
		9525	11840
1830-1900	Radio Riyadh, Saudi Arabia	9705	9720
1830-1900 A.S	Radio Canada Int'l, Montreal	13670	15260 17820
1830-1900	Radio Afghanistan, Kabul	9635	15510 17745
1830-1900	Radio Tirana, Albania	7120	9480
1830-1900	Radio Netherlands Int'l, Hilversum	6020	15560 17605 21685
1830-1900	Swiss Radio International, Berne	9885	11955
1830-1900	Swiss Radio Int'l European Service	3985	6165 9535
1840-1850 M-A	Voice of Greece, Athens	11645	12105 15625
1845-1900	All India Radio, New Delhi	7412	9665 9910 11620
		11860	11935
1845-1855v	IRR Africa No. 1, Gabon	15475	

1900-1950	Deutsche Welle, Koln, W. Germany	11785	11810	13790	15390
		17810			
1900-2000	ELWA, Monrovia, Liberia	11800			
1900-2000	CBC, Montreal	9625			
1900-2000	Radio New Zealand, Wellington	15485			
1900-2000	Radio Moscow World Service	11765	11840	12010	12060
		13605	15405	15540	15580
		17570	17670	21630	21740
		21630			
1900-2000	Radio Moscow African Svc	11960	12035	15230	15520
		17655			
	(In English & Zulu)				
1900-2000 M-F	RAE, Buenos Aires, Argentina	15345			
1900-2000	Radio Beijing, China	9440	11515		
1900-2000	Solomon Islands Broadcasting Co.	5020			
1900-2000	KVOH, Rancho Simi, California	17775			
1900-2000	BBC World Service, London, England	9410	12095	15070	15400
		17880			
1900-2000	CBN, St. John's, Newfoundland	6160			
1900-2000	CBU, Vancouver, British Columbia	6160			
1900-2000	CFCF, Montreal, Quebec, Canada	6005			
1900-2000	CFCN, Calgary, Alberta, Canada	6030			
1900-2000	CHNS, Halifax, Nova Scotia, Canada	6130			
1900-2000	Christian Science World Service	11650	13625	21640	
		(+17555 & 15610 A.S)			
		(+21780 M-F)			
1900-2000	CKWX, Vancouver, British Columbia	6080			
1900-2000	CFRB, Toronto, Ontario	6070			
1900-2000	GBC Radio, Accra, Ghana	6130			
1900-2000	HJCB European Service, Ecuador	17790	21480	25950	ssb
1900-2000	KUSW, Salt Lake City, Utah	15590			
1900-2000	Radio Algiers, Alger	9510	9685	15215	
1900-2000	Radio Australia, Melbourne	5995	6020	6035	6080
		7205	7215	7240	9580
		11855			
		(+13745 from 1930)			
1900-2000 A.S	Radio for Peace Int'l, Costa Rica	13630	21566		
1900-2000	Spanish National Radio, Madrid	11790	15280	15375	15395
1900-2000	Voice of America-Africa Service	7195	15410	15445	15580
		15600	17785	17800	17870
		21485			
1900-2000	Voice of America-Middle East Service	6040	9700	9760	11760
		15205			
1900-2000	Voice of America-Pacific Service	9525	11870	15180	
1900-2000	WHRI, Noblesville, Indiana	13760	17830		
1900-2000	WINB, Red Lion, Pennsylvania	15295			
1900-2000 S-F	WMLK, Bethel, Pennsylvania	9465			
1900-2000	WRNO, New Orleans, Louisiana	15420			

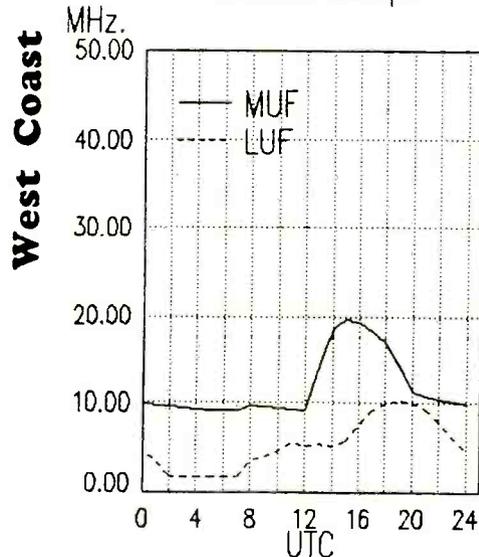
1900 UTC [2:00 PM EST/11:00 AM PST]

1900-1910	Radio Tanzania	5985	6105	7165	9684
1900-1910 M-A	Vatican Radio	6190	6248	7250	9645
		17710	17730	21650	
1900-1915	Sierra Leone Brdcstng.Co., Freetown	3316			
1900-1920	Radio Botswana	3356	4830		
1900-1920v	Radio Omdurman, Sudan	11635			
1900-1925	Radio Netherlands Int'l, Hilversum	6020	15560	17605	21685
1900-1930 M-F	Radio Budapest, Hungary	15160	1910	9835	9585
		7220	6110		
1900-1930	Radio Canada Int'l, Montreal	13670	15260	17820	
1900-1930	Radio Sofia, Bulgaria	11680	15310	17825	
1900-1930	Radio Afghanistan, Kabul	9635	15510	17745	
1900-1930 M-F	Radio Canada Int'l, Montreal	13670	15260	17820	
1900-1930	Radio Japan General Service, Tokyo	11850	11865	15270	
1900-1930 A.S	Radio Norway International, Oslo	15220	15235	21705	25730
1900-1930 M-F	Radio Portugal, Lisbon	11740	15250	21530	
1900-1930	Voice of Vietnam, Hanoi	9840	12020	15010	
1900-1945	All India Radio, New Delhi	7412	9665	9910	11620
		11860	11935		

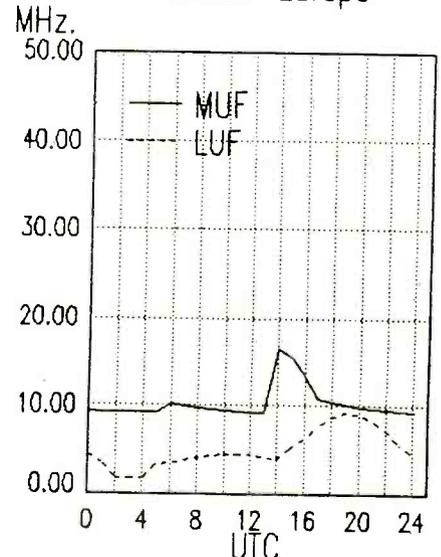
Midwest To Alaska



West Coast To Western Europe



West Coast To Eastern Europe



frequency

section

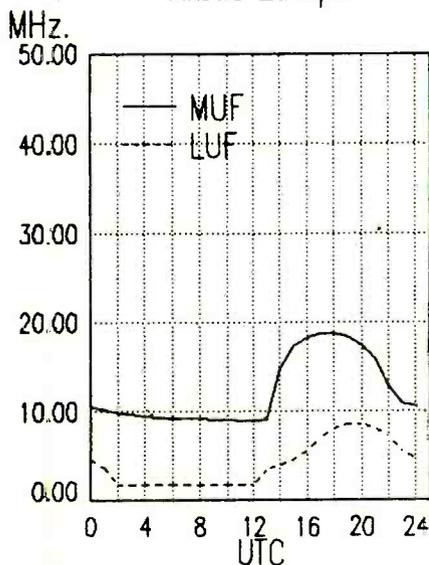
1900-2000	WWCR, Nashville, Tennessee	15690			
1900-2000	WYFR, Okeechobee, Florida	11830	13695	15440	15566
		17612	17885	21615	
1920-1930	M-A Voice of Greece, Athens	9395	11645		
1930-2000	M Radio Tallin, Estonia	5925			
1930-2000	Radio Austria International, Vienna	5945	6155	12010	13730
1930-2000	Radio Romania Int'l, Bucharest	5955	9690	9750	11810
1930-2000	A.S Radio Budapest, Hungary	6110	7220	9585	9835
		11910	15160		
1930-2000	Radio Sofia, Bulgaria	11660	11765	15330	
1930-2000	Radio Yugoslavia, Belgrade	7215	9660	11735	
1930-2000	M-F Radio Canada Int'l, Montreal	5995	7235	11945	15325
		17875			
1930-2000	Radio Korea, Seoul	6480	7550	15575	
1930-2000	Radio Tikhiv Okean, Vladivostok	5015	7335	9885	11870
		11995	15180	15435	15535
		15560	17645	17850	
1930-2000	Voice of the Islamic Republic Iran	6080	n 9022	15084	
1935-1955	RAI, Rome, Italy	7275	9710	11800	
1940-2000	M,W,H,A,S Radio Ulan Bator, Mongolia	11850	12050		
1945-2000	All India Radio, New Delhi	11935			
1945-2000	Radio Korea, Seoul	5975	9870		
1950-2000	Vatican Radio	6190	7250	9645	

2000-2100	Radio Australia, Melbourne	6020	6035	7205	7215
		7240	9580	11855	13745
		(+ 6080 & 5995 until 2030)			
2000-2100	M-AABC, Alice Springs, Australia	2310	(ML)		
2000-2100	ABC, Katherine, Australia	2485			
2000-2100	M-AABC, Tennant Creek, Australia	2325	(ML)		
2000-2100	CBN, St. John's, Newfoundland	6160			
2000-2100	CBU, Vancouver, British Columbia	6160			
2000-2100	CFCF, Montreal, Quebec, Canada	6005			
2000-2100	Radio Moscow World Service	7315	11630	11670	11805
		11890	12060	13605	15185
		15315	15355	15560	17695
		11715	11775	11960	12035
2000-2100	Radio Moscow Africa Service	15520	15535	21630	21740
		9625	(ML)		
2000-2100	CBC, Montreal	6030			
2000-2100	CFCN, Calgary, Alberta, Canada	6030			
2000-2100	CHNS, Halifax, Nova Scotia, Canada	6130			
2000-2100	Radio Baghdad, Iraq	13660			
2000-2100	Christian Science World Service	9455	9495	11980	13625
		13770	15610	17555	
2000-2100	CKWX, Vancouver, British Columbia	6080			
2000-2100	Radio Sta. Peace & Progress, USSR	9470	9820	11830	11880
		11980	15260		
2000-2100	CFRB, Toronto, Ontario	6070			
2000-2100	KUSW, Salt Lake City, Utah	15590			
2000-2100	Radio Beijing, China	9440	9920	11500	11715
		15110			
2000-2100	ELWA, Monrovia, Liberia	11800			
2000-2100	Radio Baghdad, Iraq	11860			
2000-2100	Radio Havana Cuba	11800			
2000-2100	Voice of America-Africa Service	7195	15410	15445	15580
		15600	17785	17800	17870
		19480lsb 21485			
2000-2100	Voice of America-Middle East Service	6040	9700	9760	11760
		15205			
2000-2100	WHRI, Noblesville, Indiana	13760	17830		
2000-2100	WINB, Red Lion, Pennsylvania	15185			
2000-2100	WRNO, New Orleans, Louisiana	15420			
2000-2100	KVOH, Rancho Simi, California	17775			
2000-2100	Solomon Islands Broadcasting Co.	5020			
2000-2100	WWCR, Nashville, Tennessee	15690			
2000-2100	WYFR, Okeechobee, Florida	11830	13695	15440	15566
		17612	17885	21525	21615
2000-2100	Radio New Zealand, Wellington	15485			
2005-2100	Radio Damascus, Syria	12085	15095		
2025-2045	RAI, Rome, Italy	7235	9575 11800		
2030-2100	Radio Netherlands Int'l, Hilversum	9860	13700 15560		
2030-2100	Voice of Vietnam, Hanoi	9840	12020 15010		

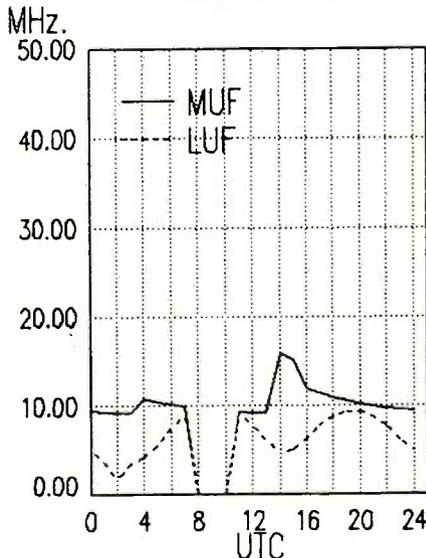
2000 UTC [3:00 PM EST/12:00 PM PST]

2000-2010	Vatican Radio, Vatican City	6190	7250	9645	
2000-2010	M,W,H,A,S Radio Ulan Bator, Mongolia	11850	12050		
2000-2010	Sierra Leone Brdcstng.Co., Freetown	3316			
2000-2030	Kol Israel, Jerusalem	11605	11745	12077	15090
		15485	17575		
2000-2030	M-F Radio Portugal	15250			
2000-2030	Radio Prague Int'l, Czechoslovakia	5930	6055	7345	11990
2000-2030	Radio Romania Int'l, Bucharest	5955	9690	9750	11810
2000-2030	Radio Korea, Seoul	6480	7550	15575	
2000-2030	Voice of the Islamic Republic Iran	6080	9022	15084	
2000-2050	Radio Pyongyang, North Korea	6576	9345	9640	9977
2000-2100	Radio Moscow British Service	7330	11630	11930	15185
		17695			
2000-2100	M-F Radio for Peace Int'l, Costa Rica	13630	21566		
2000-2100	KHBN Guam	9820	ML		
2000-2100	Voice of Indonesia, Jakarta	11753	11785		
2000-2100	Voice of Hope, Lebanon	6280			
2000-2100	BBC World Service, London, England	5975	9410	12095	15070
		15260	15400	17755	17760
		17880			

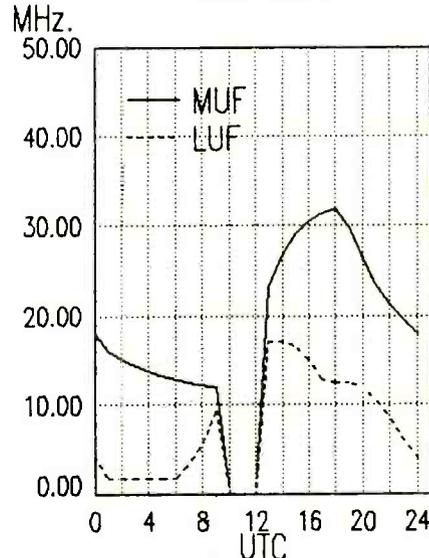
West Coast To Arctic Europe



West Coast To Middle East



West Coast To West Africa



West Coast

frequency

section

2045-2100 All India Radio, New Delhi 7412 9665 9910 11620
11715 15265

2100 UTC [4:00 PM EST/1:00 PM PST]

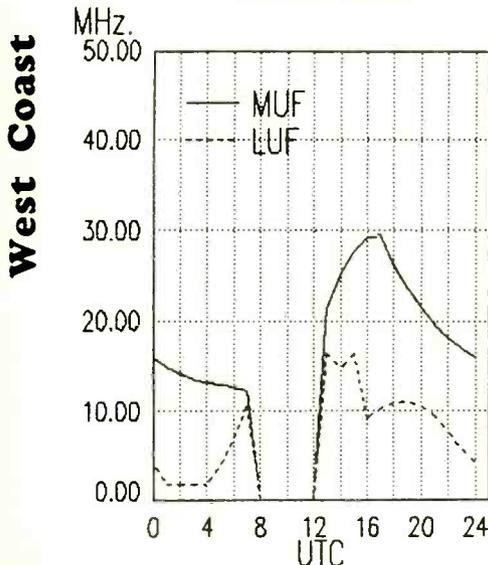
2100-2105	Radio New Zealand, Wellington	15485			
2100-2105	Radio Damascus, Syria	12085	15095		
2100-2115	Radio Prague Int'l, Czechoslovakia	5930	6055	7345	11990
2100-2125	Radio Netherlands Int'l, Hilversum	9860	13700	15560	
2100-2130	M Radio Ljubljana, Yugoslavia	5980	7240	9620	
2100-2130	Vatican Radio	17710	17730	21650	
2100-2130	A.S Radio Norway, Oslo	15165			
2100-2130	Radio Budapest, Hungary	11910	15160	9835	9585
		7220	6110		
2100-2130	Sierra Leone Brdcstng.Co.,Freetown	3316			
2100-2130	Radio Korea, Seoul	15575	7550	6480	
2100-2130	Radio Romania Int'l, Bucharest	9690	9750	11810	11940
2100-2130	Radio Beijing, China	3985	11715	15110	
2100-2130	Radio Japan General Service, Tokyo	11815	11835	15270	17765
		17810	17890		
2100-2130	Radio Sweden, Stockholm	9655	11705		
2100-2130	Swiss Radio International, Berne	9885	13635	15525	12035
2100-2130	Radio Finland, Helsinki	6120	11755	15400	
2100-2150	Deutsche Welle, Koin, West Germany	9670	9765	11785	13780
		15435			
2100-2200	ELWA, Monrovia, Liberia	11800			
2100-2200	Radio Angola Int'l Svc, Luanda	3355	9535		
2100-2200V	All India Radio, New Delhi	7412	9665	9910	11620
		11715	15265		
2100-2200	CBC Montreal	9625			
2100-2200	Radio Moscow World Service	7115	7150	7315	9685
		11670	11745	11775	11805
		11840	11890	11985	12040
2100-2200	Voice of Turkey, Ankara	9795			
2100-2200	Radio Kiev, Ukraine	9865			
2100-2200	CBN, St. John's, Newfoundland	6160			
2100-2200	KHBN Guam	9820	ML		
2100-2200	CBU, Vancouver, British Columbia	6160			
2100-2200	Voice of Hope, Lebanon	6280			
2100-2200	CFCF, Montreal, Quebec, Canada	6005			
2100-2200	CFCN, Calgary, Alberta, Canada	6030			
2100-2200	CHNS, Halifax, Nova Scotia, Canada	6130			
2100-2200	Christian Science World Service	9455	9495	13625	13770
		15310	15610	17555	
2100-2200	Solomon Islands Broadcasting Co.	5020	9545		
2100-2200	CKWX, Vancouver, British Columbia	6080			
2100-2200	CFRB, Toronto, Ontario	6070			

2100-2200	T-A KUSW, Salt Lake City, Utah	15590			
2100-2200	Radio Australia, Melbourne	11880	15465	17795	
		(until 2130: 7215 13745)			
		(from 2130: 15240)			
2100-2200	Radio Cairo, Egypt	9900			
2100-2200	KVOH, Rancho Simi, California	17775			
2100-2200	Radio Baghdad, Iraq (to Europe)	13660			
2100-2200	Radio Baghdad, Iraq	11860			
2100-2200	Radio Beijing, China	9920	11500		
2100-2200	Radio for Peace, Costa Rica	13630	21566		
2100-2200	Radio Havana Cuba	11800	17860		
2100-2200	Voice of America-Africa Service	7195	15410	15445	15580
		15600	17785	17800	17870
		21485			
2100-2200	Voice of America-Middle East Service	6040	9700	9760	11760
		15205	11710		
2100-2200	Voice of America-Pacific Service	11870	15185	17735	
2100-2200	WHRI, Noblesville, Indiana	13760	17830		
2100-2200	WINB, Red Lion, Pennsylvania	15185			
2100-2200	BBC World Service, London, England	5975	9410	12095	15070
		15260	15400	17755	17760
		17880			
2100-2200	WRNO Worldwide, Louisiana	15420			
2100-2200	WWCR, Nashville, Tennessee	15690			
2100-2200	WYFR, Okeechobee, Florida	11830	13695	15566	17612
		17885	21525	21615	
2105-2200	Radio New Zealand, Wellington	17675			
2110-2200	Radio Damascus, Syria	12085	15095		
2130-2200	Radio Sofia, Bulgaria	11660	11765	15330	
2130-2200	Radio Canada Int'l, Montreal	11880	13670	15150	17820
2130-2200	Radio Japan, Tokyo	11815	11835	15270	17765
		17810	21610		
2130-2200	HCJB, Quito, Ecuador	15270	17790	25950	ssb

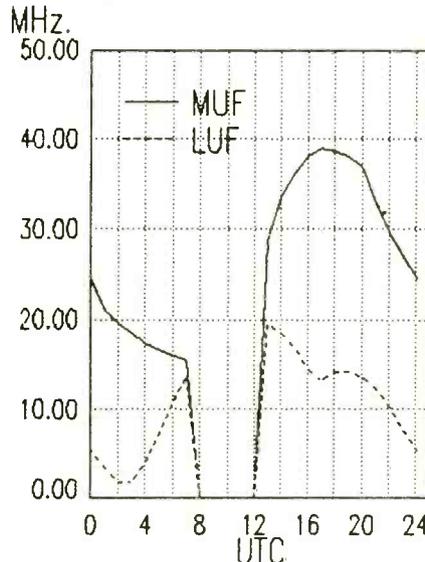
2200 UTC [5:00 PM EST/2:00 PM PST]

2200-2205	Radio Damascus, Syria	12085	15095		
2200-2215	Sierra Leone Brdcstng.Co.,Freetown	3316			
2200-2215	M-AABC, Alice Springs, Australia	2310	(ML)		
2200-2215	ABC, Tennant Creek, Australia	2325	(ML)		
2200-2215	M-F Voice of America-Caribbean Service	9640	11880	15225	
2200-2225	RAI, Rome, Italy	5990	7235	9710	
2200-2230	BRT Brussels, Belgium	5910	9925		
2200-2230	Radio Canada Int'l, Japan relay	11705			
2200-2230	ABC, Katherine, Australia	2485			
2200-2230	S KGEI, San Francisco, California	15280			

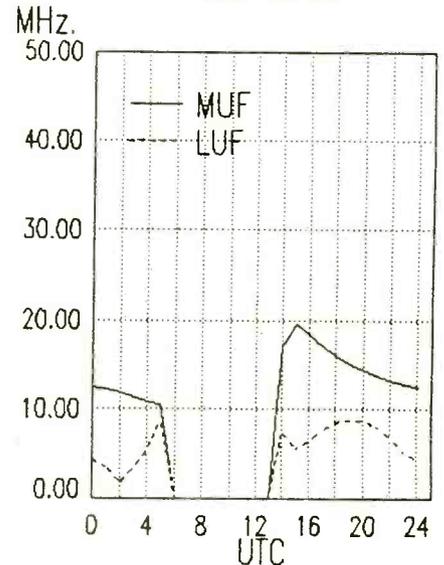
West Coast To
Central Africa



West Coast To
South Africa



West Coast To
East Africa



frequency

section

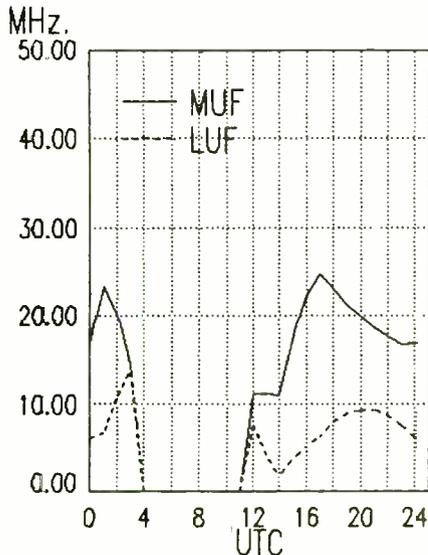
2200-2230	All India Radio, New Delhi	7412	9665	9910	11620
			11715	15265	
2200-2230	A.S. Radio Norway International, Oslo	15195			
2200-2245	WINB Red Lion, PA	15295			
2200-2245	Radio Yugoslavia, Belgrade	5955	9620	11735	15165
2200-2300	KHBN Guam	9820	ML		
2200-2300	Radio Canada Int'l, Montreal	9760	11945		
2200-2300	Radio New Zealand, Wellington	17675			
2200-2300v	Radio Cairo, Egypt	9900			
2200-2300	BBC World Service, London, England	5975	6005	6175	6195
		7325	9410	9590	9915
		11750	12095	15070	15260
		15400	17750	17830	
2200-2300	CBC Northern Quebec Svc, Canada	9625			
2200-2300	CBN, St. John's, Newfoundland	6160			
2200-2300	Radio Korea, Seoul	15575			
2200-2300	Radio Moscow North American Svc	11670	11690	11710	11780
		11800	12040	12050	13605
		15315	15355	15425	15580
		15595	17735		
2200-2300	Radio Sta. Peace & Progress, USSR	9470	9820	11830	11880
		11980	15260		
2200-2300	Radio Moscow World Service	11615	11745	11775	11985
	(from 2230 add: 7315	15480	17655	17850	17890)
2200-2300	CBU, Vancouver, British Columbia	6160			
2200-2300	CFCF, Montreal, Quebec, Canada	6005			
2200-2300	CFCN, Calgary, Alberta, Canada	6030			
2200-2300	CHNS, Halifax, Nova Scotia, Canada	6130			
2200-2300	Christian Science World Service	9465	15225	15275	15300
		15405	15610	17555	
2200-2300	CKWX, Vancouver, British Columbia	6080			
2200-2300	CFRB, Toronto, Ontario	6070			
2200-2300	T-A KUSW, Salt Lake City, Utah	15590			
2200-2300	Voice of Hope, Lebanon	6280			
2200-2300	Radio Australia, Melbourne	11880	13605	15240	15465
		17715	17795	21740	
2200-2300	Radio for Peace Int'l, Costa Rica	13630	21566		
2200-2300	Radio Tonga, Kingdom of Tonga	5030v			
2200-2300	Voice of America-East Asia Service	7120	9770	11760	15185
		15290	15305	17735	17820
2200-2300	Voice of America-Eur/Pac. Service	9852	11805	15345	15370
		17610			
2200-2300	Voice of Free China, Taiwan	17750	21720		
2200-2300	United Arab Emirates R., Abu Dhabi	9600	11985	13605	
2200-2300	WHRI, Noblesville, Indiana	13760	17830		
2200-2300	WRNO Worldwide, Louisiana	15420			
2200-2300	WWCR, Nashville, Tennessee	15690			

2200-2300	WYFR, Okeechobee, Florida	11580	11830	13695	17612
		17885	21525		
2205-2230	Vatican Radio, Vatican City	7125	9615	11830	15105
2230-2300	Voice of Vietnam, Hanoi	9840	12020	15010	
2230-2300	Radio Polonia, Warsaw, Poland	5995	6135	7125	7270
2230-2300	Radio Tirana, Albania	7215	9480		
2230-2300	Kol Israel, Jerusalem	9435	11605	11655	11745
		12077	17575		
2230-2300	Radio Sofia, Bulgaria	11660	15330		
2230-2300	Radio Vilnius, Lithuania	6100	9675		
2230-2300	Swiss Radio Int'l, European Service	6190			
2245-2300	WINB Red Lion, PA	15145			

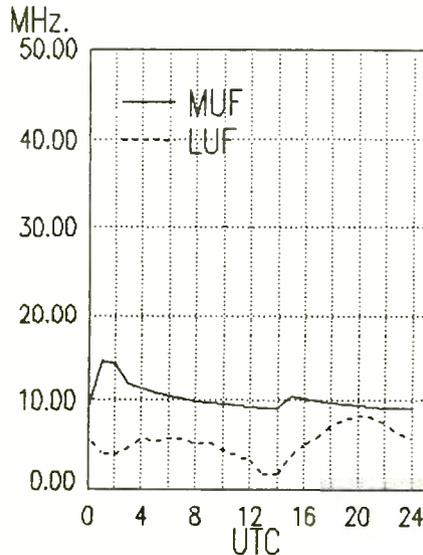
2300 UTC [6:00 PM EST/3:00 PM PST]

2300-2310	Sierra Leone Brdcstng.Co., Freetown	3316			
2300-2325	Radio Finland, Helsinki	11755	15185		
2300-2330	Radio Vilnius, Lithuania	6100	7400	9865	11790
		13645	15455		
2300-2330	Radio Canada Int'l, Montreal	9755	11730		
2300-2330	Radio Sofia, Bulgaria	11660	11720		
2300-2345	WYFR, Okeechobee, Florida	5985	11580	15170	
2300-2350	Radio Pyongyang, North Korea	11735	13650		
2300-0000	Radio Havana Cuba	11930			
2300-0000	Radio Thailand, Bangkok	4830	9655	11905	
2300-0000	Radio Korea, Seoul	15575			
2300-0000	KHBN Guam	9820	ML		
2300-0000	Adventist World Radio, Costa Rica	9725	11870		
2300-0000	Radio Moscow North American Svc.	7150	7315	11710	11780
		11800	12040	12050	13605
		15315	15355	15425	15580
		15595	17735		
2300-0000	Voice of Turkey, Ankara	9445	9665	9685	17880
2300-0000	Radio Moscow World Service	12005	15140	15480	15550
		15590	17570	17600	17620
		17655	17730	17850	21585
		21690	21790		
2300-0000	CBN, St. John's, Newfoundland	6160			
2300-0000	CBU, Vancouver, British Columbia	6160			
2300-0000	CFCF, Montreal, Quebec, Canada	6005			
2300-0000	CFCN, Calgary, Alberta, Canada	6030			
2300-0000	CHNS, Halifax, Nova Scotia, Canada	6130	15405		
2300-0000	BBC World Service, London, England	5975	6175	6195	7325
		9410	9590	9915	11750
		15260			
2300-0000	Christian Science World Service	9465	15225	15275	15300
		15405	15610	17555	

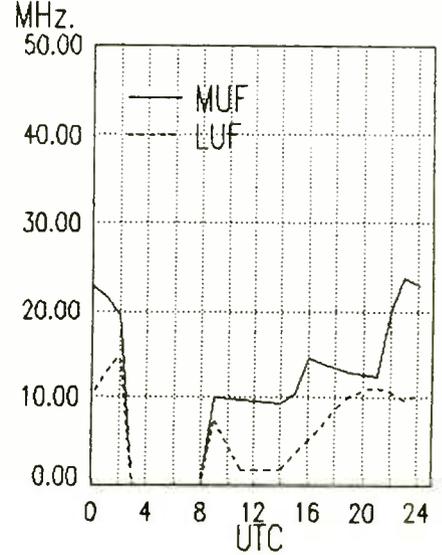
West Coast To Indian Ocean



West Coast To Central Asia



West Coast To South East Asia



West Coast

frequency

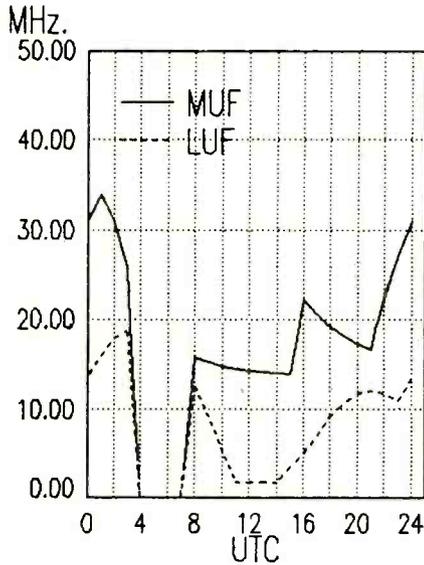
section

2300-0000	Radio for Peace Int'l, Costa Rica	13630	21566
2300-0000	CKWX, Vancouver, British Columbia	6080	
2300-0000	CBC Montreal	9625	
2300-0000	CFRB, Toronto, Ontario	6070	
2300-0000	KSDA, Guam	15125	
2300-0000	T-A KUSW, Salt Lake City, Utah	15590	
2300-0000	Radio Australia, Melbourne	11880	13605 15240 15465
		17630	17715 17750 17795
		21740	
2300-0000	Radio Japan General Service, Tokyo	11835	15195 17765 17810
		21610	
2300-0000	Radio Luxembourg	6090	
2300-0000	Radio Tonga, Kingdom of Tonga	5030v	
2300-0000	Voice of America-East Asia Service	7120	9770 11760 15185
		15290	15305 17735 17820
2300-0000	United Arab Emirates R., Abu Dhabi	9600	11985 13605

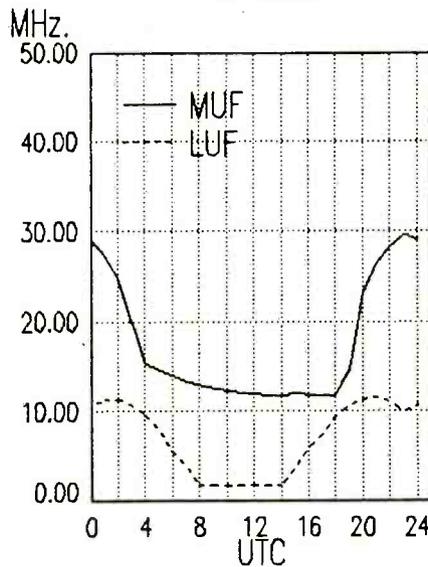
2300-0000	WHRI, Noblesville, Indiana	9495	13760
2300-0000	WINB, Red Lion, Pennsylvania	15145	
2300-0000	WRNO, New Orleans, Louisiana	15420	
2300-0000	WWCR, Nashville, Tennessee	15690	
2305-2355	Radio Polonia, Warsaw, Poland	5995	6135 7125 7145
		7270	
2315-0000	All India Radio, New Delhi	9535	9910 11715 11745
		15110	
2330-0000	Voice of Vietnam, Hanoi	9840	12020 15010
2330-0000	Radio Tirana, Albania	6120	9760 11825
2335-2345	M-A Voice of Greece, Athens	9395	11645
2345-0000	Radio Korea, Seoul	7275	

West Coast

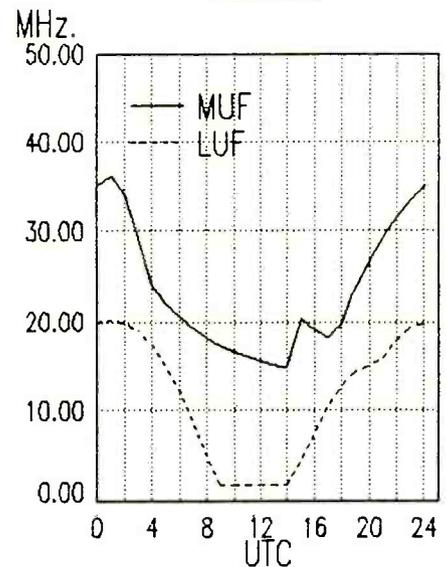
West Coast To
Indonesia



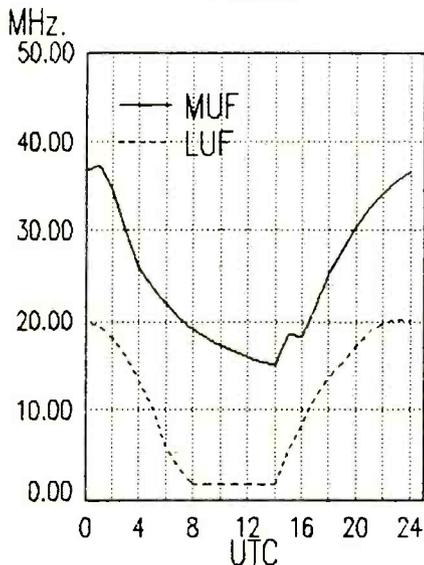
West Coast To
Far East



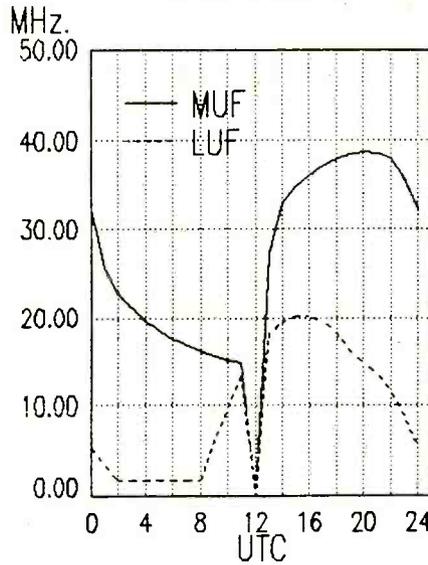
West Coast To
Australia



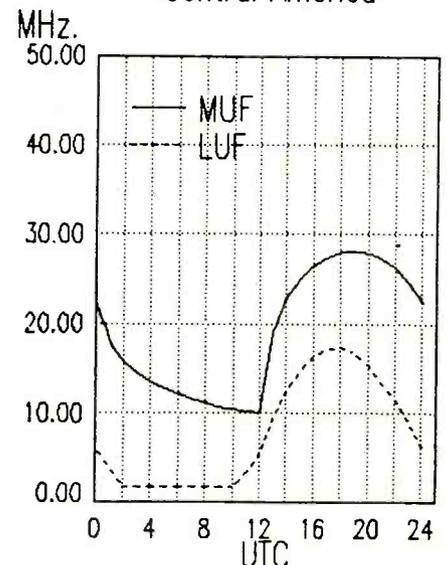
West Coast To
Pacific



West Coast To
South America



West Coast To
Central America



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Radio-Electronics 7MT02

New Portables from Sangean, Radio Shack, Magnavox and Philips

Not long back, we reviewed DAK's MR-101 -- a \$50 world band radio with features aplenty, but so little sensitivity as to make it all but useless.

There's a story behind that radio, and it leads us to this month's models. But let's get back to those in a moment.

At Last -- The Real Thing

Here's what we've unearthed. It appears that the giant international electronics conglomerate, Philips, decided to transfer the R&D and production of its new line of world band radios to Asia. These proposed new radios would succeed the D2935 and D2999 portables, which rightly had become famous as first-rate performers at hamburger prices.

Here, the trail thins, but it appears that at least two firms were approached by Philips: Sangean of Taiwan, and another firm in China proper. Sangean got the contract, but the Chinese firm apparently was made privy to enough of Philips' specifications to produce a knockoff model...even *before* the original model could be produced. This knockoff model, of course, was the DAK MR-101.

Finally, the "real" radio appeared -- under no less than four guises: the Philips AE 3805, Magnavox AE 3805 (Magnavox is owned by Philips), Sangean ATS 800, and Radio Shack's Realistic DX-370. All are essentially identical in performance, and all are manufactured by Sangean. But the Sangean and Realistic incarnations differ from the others in how the controls are laid out, and also in that they have stereo FM -- not just mono -- via headphones.

These models are vastly superior to the DAK imitation, which is more of a novelty than a real radio. Apparently, the Chinese firm that produces the DAK unit laid its hands on only some superficial specs, which would help explain why the DAK has so many obvious features, but performs so poorly.

Reasonable Shortwave Coverage...

Like the DAK, the compact ATS 800 is small enough for trips, yet beefy enough for household use. It covers FM in 200 kHz steps, AM from 530-1630 kHz in 10 kHz steps, and shortwave from 3.2-7.3 and 9.5-21.75 MHz in 5 kHz steps.

This means it misses 120 and 11 meters; plus the 7.3-7.6, 9.3-9.5, and 21.75-21.85 MHz portions of 41, 31 and 13 meters. Complete world band coverage is unusual in the '800's price class, but there are a lot of stations squirreled away in the not-covered 7.3-7.6 and 9.3-9.5 MHz slices. Look over *Passport/91's* Blue Pages between 7305-9495 kHz to see whether you can live without these.

...but AM and FM for Americas Only

If you take this set abroad, there is another problem -- but not on shortwave. The radio's 200 kHz and 10 kHz tuning steps for FM and AM, respectively, are appropriate for the Western Hemisphere, but not elsewhere where channel spacing is narrower. Even in the Americas, the forthcoming expanded AM band is covered to only 1630 kHz -- not the upper parameter of 1705 kHz.

Unusual Tuning System

To keep costs low, the radio has precious few tuning facilities. Not only is there no tuning knob, there's no keypad, either. Instead, tuning is dependent on a pair of up/down multi-speed slewing buttons, and ten memories for shortwave (plus five more each for AM and FM).

In principle, this is a questionable approach. However, in practice it works pretty well. The radio can clog along at one channel per keystroke, cruise through the bands at a pleasant rate, or zip from band to band at high speed. Tuning from 9.5 to 21.7 MHz, for example, takes only 10 seconds -- and a safecracker's touch -- to bring the radio to a screeching halt somewhere near the desired channel.

As with the DAK, tuning is complicated by a hoary "SW1 SW2" control. SW1 tunes from 3.2-7.3 MHz, SW2 from 9.5 to 21.75 MHz. It's annoying, but you quickly get used to it.

The on/off signal-strength indicator is of little value, but the 24-hour World Time clock is -- even though the radio can't display the frequency and clock at the same time.



That digital display, although it's not illuminated, has good contrast and fairly large numbers. However, it uses the XX.XXx MHz format, rather than XXXXX kHz. To boot, the least-significant digit doesn't appear if it's a zero. So, for example, 15360 shows as 15.36. Again, a petty annoyance that you grow accustomed to.

For traveling, there's also a lock switch to keep the power from coming on accidentally during transit. Unlike that on the DAK, this one really works. There's also an alarm clock built in -- useful when you're on the road. However, there's no carrying strap or handle.

Performance Clearly Superior to DAK Unit

Of course, what counts most is performance, and here's what really separates the Sangean from its pale DAK imitator. In all, its performance about what you would expect from one of the better models in this price range that lacks digital frequency display. Sensitivity is quite good below 7.3 MHz; less good, but still adequate for East Coast listeners, from 9.5-21.75 MHz. Selectivity is a tad wide, but still slightly above average for this price group.

The one significant drawback: spurious-signal rejection. This radio has only a single-conversion IF strip, so repeats -- images -- of stations tend to appear 900 kHz away, twice the intermediate frequency of 450 kHz. It's the one thing in which some comparably priced models with analog readout -- Sony's ICF-7601, for example -- fare better.

Speaker audio is reasonably pleasant for such a small set, provided it's not played too loudly. Audio quality is at least comparable through earpieces.

Bottom Line: Best Digital Under \$150

Overall, the Sangean ATS 800, in its four versions, fills an important spot in the world band market. It's not the cheapest set around, and it's certainly not the best. But it is the first model under \$150 to combine reasonably good performance with digital frequency display.

List prices vary from the Realistic DX-370's \$119.95 to Magnavox's \$149.95. Street prices, though, tend to be pretty similar, regardless of the brand name.



You can hear Larry Magne's equipment reviews the first Saturday of each month, plus PASSPORT editors Don Jensen and Tony Jones the third Saturday, over Radio Canada's "SWL Digest." For North America, "SWL Digest" is heard at 7:35 PM ET on 5960 and 9755 kHz, with a repeat Tuesday at 8:30 AM ET on 9635, 11855 and 17820 kHz.

PASSPORT'S "RDI White Paper" equipment reports contain everything found during its exhaustive tests of communications receivers, antennas and advanced portables. These reports are now available in the U.S. from Universal Shortwave and EEB; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland, and Lowe Electronics stores; and in Japan from IBS-Japan, 5-31-6 Tamanawa, Kamakura 247. For a complete list of reports, send a self-addressed stamped envelope to RDI White Papers, Box 300M, Penn's Park PA 18943 USA.

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The AR3000 vs. the R7000:

Which is Better?



Probably no question regarding radio comparisons is asked more often than that of the two top contenders of high end VHF/UHF scanning receivers: the popular ICOM R7000, now several years old and selling for slightly over \$1000, and the new AOR AR3000, selling for slightly under \$1000.

First, it must be understood that the two models are quite different in terms of their intended markets. The ICOM R7000 is a VHF/UHF communications receiver for 30 megahertz and above, designed for serious-minded monitors who need more stringent specifications than scanners offer.

A key market for the 7000 is the federal government who uses a large number of these receivers; so many, in fact, that some shortages to the consumer market have been attributed to large government contract purchases.

For a communications receiver intended for intercept applications, memory channels and scanning capability are secondary to single-signal reception and overall receiver performance.

The AOR AR3000, on the other hand, is first and foremost a scanner; its wide frequency coverage, reaching down below the AM broadcast band, is not intended to compete with dedicated shortwave communications receivers, nor does it.

Think of it as a VHF/UHF, continuous-frequency-coverage scanner with extended range down into the shortwave frequencies and below, and you will be satisfied with its performance.

Specs at a Glance

Extracted from the Grove catalog

ICOM R7000

Frequency range: 25-1000, 1025-2000 MHz
 Keypad frequency entry: Yes
 Tuning steps: 0.1/1/5/10/12.5/25 kHz
 RIT (fine tuning): No
 Display: Fluorescent
 Dimmer: Yes
 Type of listening recommended: VHF/UHF utilities
 Receiving modes: AM, wide FM, narrow FM, SSB
 Memory: 99 channels
 Scan: Yes, programmable by mode
 Banks: No
 Lockout: No
 Priority: No
 Search: Yes, with autoload
 Delay: Yes
 Squelch: Yes
 Clock: No
 Audio output power: 2.5 watts
 Record output: Yes
 Recorder activator: Yes
 S meter: analog
 Computer interface: Optional
 Conversion scheme: Triple up-conversion under 1000 MHz, quadruple above
 Sensitivity: 0.5 uV AM/narrow FM; 1uV AM
 Selectable preamplifier: No
 Selectable attenuator: Yes
 Selectivity: (-6 dB): SSB 2.8 kHz, narrow FM/AM 15 kHz, wide FM 150 kHz
 Image rejection: 60 dB
 Frequency stability: +/- 5 ppm @ -10 to +60 degrees centigrade
 Selectable AGC: No
 Dynamic range: Unknown
 Passband tuning: No
 Noise blanker/limiter: Yes
 Adjustable notch filter: No
 Tone control: No
 Antenna connector: N female
 Auxiliary connector: 10.7 MHz IF output
 Dimensions: 11 1/4"W x 4 3/8"H x 10 7/8"D
 Weight: 16 lbs.
 Power requirements: 120/240 VAC @ 1.5 A; 12 VDC with optional adaptor
 Warranty: One year
 Accessories included: None

AOR AR3000

Frequency range: 100 kHz-2036 MHz (continuous)
 Keypad frequency entry: To 4 decimal places
 Tuning steps: 50 Hz-100 kHz, selectable
 RIT (fine tuning): Not required
 Display: Backlit LCD
 Dimmer: No
 Type of listening recommended: VHF/UHF communications, casual shortwave broadcast and communications
 Receiving modes: AM, FM wide, FM narrow, USB, LSB, CW
 Memory: 400 channels (frequency, channel number, mode, attenuator setting)
 Scan: 20 channels per second
 Banks: 4
 Lockout: Yes
 Priority: 4 channels
 Search: 4 ranges, 2 steps per second
 Delay: All-channel, 2 seconds
 Squelch: Yes
 Clock: 24 hour with timer
 Audio output power: 1.2 watts into 4 ohms @ 10% THD
 Record audio output: Yes
 Recorder activator: Yes
 S meter: LCD bargraph
 Computer interface: RS-232
 Conversion scheme: Triple up-conversion (quadruple on wideband FM)
 Sensitivity: 0.25 uV SSB, 0.35 uV NFM, 1 uV AM (2.5-1800 MHz)
 Selectable preamplifier: No
 Selectable attenuator: 20 dB
 Selectivity: (-6/-60 dB) 2.4/4.5 kHz SSB, 12/20 kHz AM/NFM, 180 kHz/1000 kHz WFM
 Image rejection: Not Available
 Frequency stability: Not Available
 Selectable AGC: No
 Dynamic range: Not Available
 Passband tuning: No
 Noise blanker/limiter: No
 Adjustable notch filter: No
 Tone control: No
 Antenna connector: BNC
 Auxiliary connector: 8-pin DIN
 Dimensions: 5 1/2"W x 3"H x 7 3/4"D
 Weight: 2 1/2 lbs.
 Power requirements: 13.8 VDC @ 500 mA
 Warranty: One year
 Accessories included: AC wall adaptor, whip antenna, DC cord, 16' wire antenna for shortwave, manual

The Test

To determine the side-by-side performance of these two fine receivers, we attached them to the same antenna system, isolating each in turn by an A/B switch so that there was no interaction between the two while one was being tested.

Because of our isolated location where all signals are very weak and there are no continuously-radiating transmitters, we used a Grove PRE4 preamplifier and beam antenna for maximum signal pickup. While this gain system would alter the apparent threshold sensitivity of the receivers, they could still be compared to each other.

Sensitivity

On low band (30-50 MHz) both receivers were equivalent in their ability to discern weak signals, but as frequency range increased to the 72-76 MHz range, the edge was given to the AOR product. The separation grew ever wider with increasing frequency range.

At UHF (450-512 MHz) signals were significantly stronger on the AOR. At 800 MHz distant signals were full quieting on the 3000, while noisy on the 7000. The dancing buzzes from 1090 MHz digital aircraft signals were strong on the AOR, but barely audible on the ICOM.

Selectivity

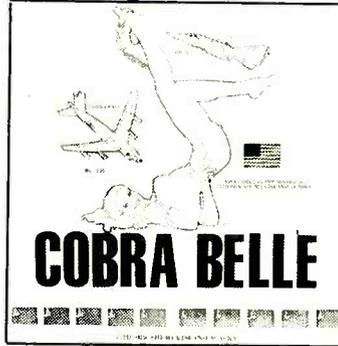
But what about strong signal environments? How did the two receivers compare in their ability to reject adjacent channel interference? Here the marks were distinctly in favor of the ICOM. The AOR scanner was broad as a barn in all modes.

Interfering adjacent-channel signals were sharply sliced off as the R7000 was tuned up and down in frequency; the same slewing of the AR3000 dial still brought in off-frequency signals quite audibly. On shortwave, this broad selectivity allowed strong signal interference from adjacent signals to completely override weak signals on center frequency.

It may be tempting to compare the AR3000 with general coverage communications receivers like the ICOM, Kenwood and JRC; this would be a mistake. Remember, this is a scanner with extended frequency coverage, allowing reception in a part of the spectrum where signals are stronger and closer together. There is no comparison. Even popular portables like the Sony ICF2010 and Sangean ATS803A will perform better on shortwave.

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Audio Quality

The larger R7000 had profoundly better sound than the compact AR3000, due in large measure to the loading effect of a larger enclosure. Without a doubt, a high-quality external speaker would benefit the scanner.

Frequency Accuracy

With fine tuning down to a few hertz available on both receivers, how accurate was the frequency display? Both receivers were measurably off, especially noticeable on single sideband, but the AOR by a much greater amount.

A call to the distributor brought this explanation: The main cause for the inaccurate display is mechanical drift of the oscillator trimmer capacitor when the receiver was being shipped. Since the AR3000 oscillator operates at VHF and UHF ranges, slight changes in capacitance can cause large changes in frequency. In any case, either receiver can be recalibrated if necessary.

Frequency stability is another matter. Unless a receiver can be fine tuned, using it on frequency-sensitive modes like single sideband, radioteletype and CW (Morse code) can be difficult if not impossible.

Many receivers have receiver incremental tuning (RIT) or a "clarifier" or "delta tune" control to effect this pruning procedure. The best receivers tune in increments (frequency steps) of only 10 or 25 Hz, making additional fine tuning unnecessary.

Neither the ICOM nor the AOR has such a control. The ICOM tunes in 100 Hz increments, making SSB reception intelligible, while the AOR tunes in 50 Hz steps for even better natural sound.

Frequency Stability

While absolute dial stability may not be a concern for AM and FM reception, it is absolutely essential for single sideband, radioteletype and even CW (Morse code). Short-term frequency drift rapidly makes reception unintelligible. We were pleased to note that both receivers provided excellent stability in these modes.

The Bottom Line

The AR3000 offers many advantages — enormous frequency coverage in all useful modes, large memory capacity with fast scan and search functions, compact installation and noticeably better sensitivity among them.

The R7000, on the other hand, is clearly more professional in its appearance and performance, with large dials and displays, cleaner audio, superior selectivity and displayed frequency accuracy.

The final choice boils down to your intended application. If you need one receiver for the widest possible frequency range and are willing to accept some compromise in performance, you will not be disappointed in the AR3000.

If you have the room and the budget for larger equipment and need optimum performance, the R7000 and another general coverage communications receiver will be clearly superior.

Indoor Antennas for the SWL

Are you an urban dweller who can't erect an outdoor antenna? Maybe you're a suburbanite who lives in a condo or apartment where outside antennas are not permitted. It is a frustrating experience: I have been there. I contrived numerous schemes and applied them for deployment of "invisible" antennas. I have used end-fed antennas made from no. 28 enamel wire. Rubber bands were used as end insulators. I also used monofilament fishing line, formed into small loops, as antenna insulators.

Unfortunately, the longevity of such flimsy antennas was poor, owing to birds flying into the small wire, stress from the wind and ice loading. I have also used plastic clothesline that had a strengthening wire inside it. Since clothesline antennas were usually only a few feet above ground (strung between the back yard support poles), performance was mediocre at best. I finally graduated to indoor antennas that were erected in the attic, storage room or strung along the baseboards of second-story rooms. This article details some of the antennas that I used successfully indoors for high-frequency reception.

The Basic Dipole

A half-wave dipole is perhaps the most simple of the indoor antennas. One of the better antennas of this type was made from two-conductor speaker wire (no. 22) with its clear plastic insulation. I routed the antenna along the area in my shack where the wall and ceiling meet, then bent the ends of the dipole downward in the corners where the walls meet. The antenna was not an eyesore, since it blended with the light-colored walls and ceiling.

I chose the folded dipole style of antenna to enable me to use additional speaker wire as the balanced feed line. The feeder was connected to a small receiving type of antenna tuner with a 4:1 balun transformer. Figure 1 shows the details of this antenna. The tuner is not required if you place the 4:1 balun between the feed line and the receiver. The effective feed impedance is 300 ohms balanced. It becomes 75 ohms unbalanced for attachment to the receiver. This is not critical, even though the specifications for your receiver may indicate a 50-ohm

impedance. The slight mismatch will not be discernible during receive.

A folded dipole that is cut for 10 MHz is 46 feet, 10 inches long overall. I find this a good midrange frequency for my shortwave listening needs. Owing to the length of this dipole it is necessary to install it in an attic or a fairly large room. The ends of the dipole may be bent and routed along the baseboard of the room if you lack sufficient space. These ends should be routed away from rather than toward one another for best results.

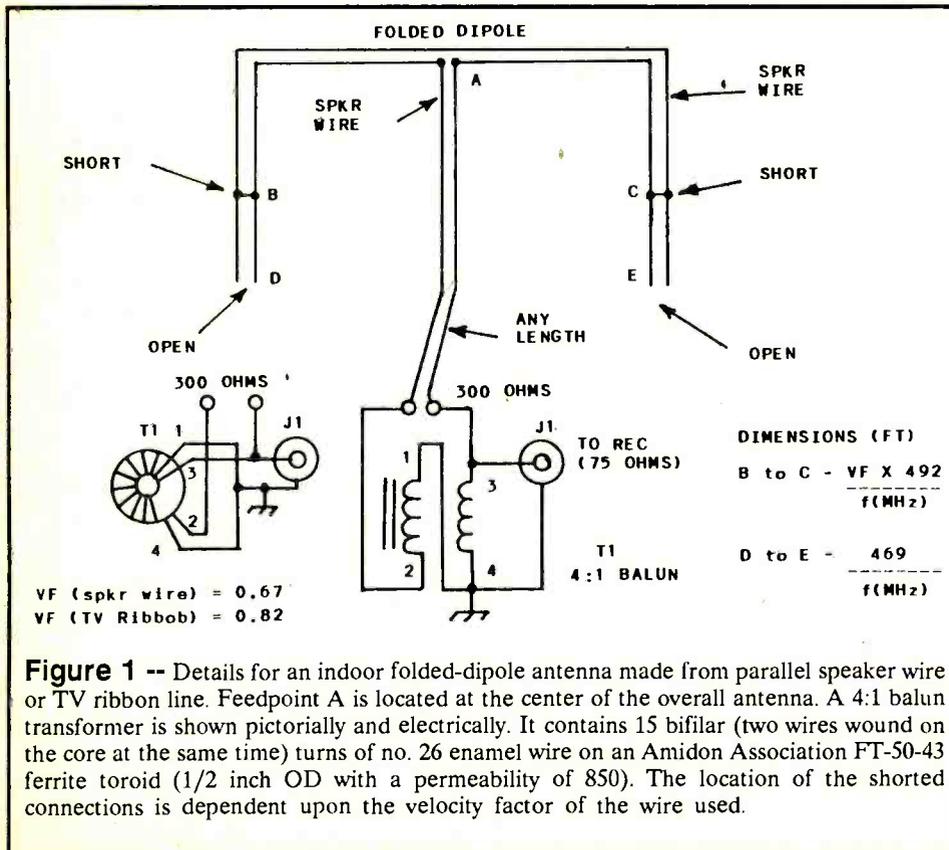
The length of a dipole is determined by dividing 468 by the desired frequency in MHz. This provided the answer in feet. Figure 1 shows shorting jumpers inward from the ends of the dipole. This is necessary when we use solid dielectric wire such as a 300-ohm TV ribbon or speaker wire in order to compensate for what is known as the VF (velocity factor) of the line. The shorting wires are not needed for folded dipoles made from open-wire line.

Wire Loops for Reception

I have had good results with wire loops of unspecified size (made to fit the available room area). These antennas were made from one conductor of low-cost no. 22 speaker wire. The two wires pull apart easily, and this provides twice the available wire for the same price. The wire loop may be routed along the ceiling, down the walls (where they join one another), then along the baseboard under the radio desk or table. The feed line is connected at floor level beneath the table.

A nonresonant loop of this type needs to be used with a small tuning capacitor in order to make it match the receiver across a wide range of frequencies. A loop offers the advantage of being a "quieter" antenna than a dipole or vertical type. This is because a closed loop is more immune to the pickup of man-made noise than are most of the ordinary wire antennas. This can be advantageous if you live in a noisy neighborhood.

Dimensions for a full-size resonant loop are obtained from: $L \text{ (feet)} = 1005/f \text{ (MHz)}$. You can see that a 10-MHz loop would be very large (100 feet and 6 inches) if it were full size. This is easy to achieve if you can erect it out of doors, but few homes or apartments have sufficient space for a big



loop, even at 25 feet per side for a square loop.

End-Fed Random-Length Wires

Perhaps the simplest of the indoor antennas is the end-fed piece of wire. Generally speaking, the longer the wire the better it will perform, especially at the lower end of the high-frequency range. This style of antenna can be dangled out of the window of an upper-level apartment for temporary use. Alternatively, you may route it into an attic or along the baseboard in your radio room.

A simple tuner can be used (Figure 3) for matching the wire to your receiver. If you have a receiver that lacks terminals for attaching an external antenna (equipped only with a telescoping whip) you may connect an end-fed wire directly to the whip antenna through a trimmer capacitor. The trimmer is adjusted for peak signal strength at the frequency of interest. Reception can be impaired if the capacitor is not used, since a direct connection to the wire can disrupt the performance of the receiver from excessive loading of the input tuned circuit.

The Figure 3 Tuner

L1 in Figure 3 needs 18 microhenries of inductance in order to tune to 2.0 MHz, which is the lowest frequency for this particular circuit. S1 can have as many switch positions as you wish. The more L1 taps the better the range of tuning up to 30 MHz. I suggest five switch positions.

Make your coil taps every eight turns on the coil. The coil has an OD of 1 inch and a winding length of 2 inches. Use 43 turns of 22 or 24 enamel wire, close wound. When tapping the coil turns be careful to avoid shorting adjacent turns. A small tab of meat-wrapping paper or other insulating material can be slipped around the tapped turn (U shaped) to prevent shorted turns. The completed coil can be coated with clear varnish to protect it from abrasion and to hold the turns firmly in position. PVC tubing or some similar plastic may be used for the coil form.

C1 is a 365-pF tuning capacitor, such as those used in the older AM broadcast radios. It is tuned for maximum signal response at the desired frequency. L2 has four turns of no. 24 enameled wire over the grounded end of L1. This tuner is suitable for any end-fed wire antenna, no matter what its length may be.

Closing Comments

The small loop in Figure 2 is tuned for a peak signal response at the chosen frequency by means of C1. This may also be a tuning capacitor from an old AM broadcast radio. Try to mount this antenna away from walls that contain power wiring and plumbing. The same rule should be followed when installing any indoor antenna.

If you attach an end-fed wire to the whip antenna of a portable radio, use a 10-100 pF trimmer capacitor between the wire and the connection point on the whip. Tune this capacitor for peak signal response.

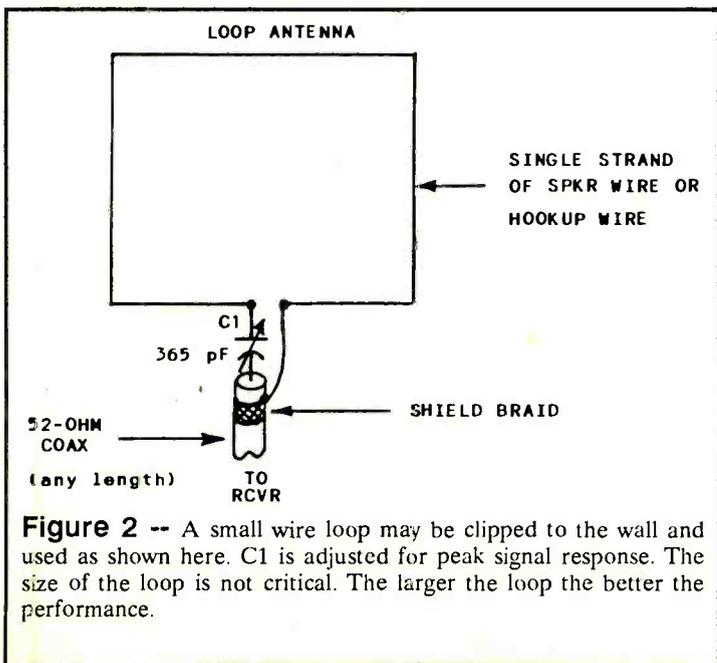


Figure 2 -- A small wire loop may be clipped to the wall and used as shown here. C1 is adjusted for peak signal response. The size of the loop is not critical. The larger the loop the better the performance.

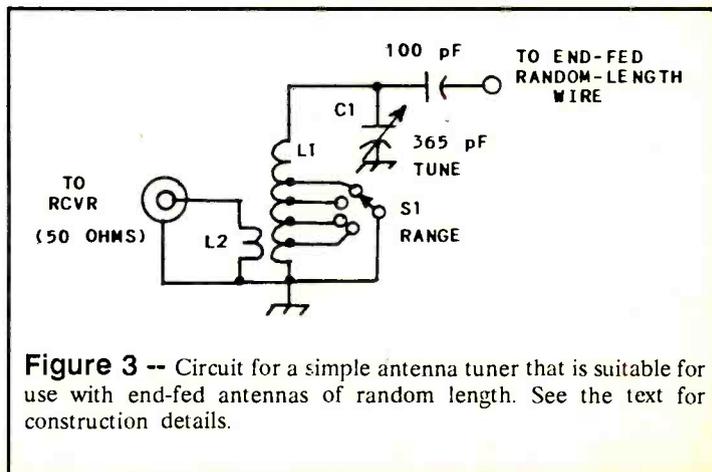
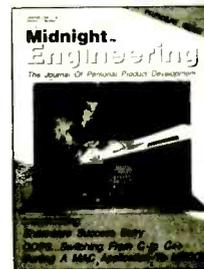


Figure 3 -- Circuit for a simple antenna tuner that is suitable for use with end-fed antennas of random length. See the text for construction details.

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Old Business and New

At times I tend to forget the range of audience that this column reaches. Such was the case with the August EW comments about "high gain" antennas used with the Sony 2010 receiver. A flood of letters and phone calls has led us back to this, one of my favorite topics.

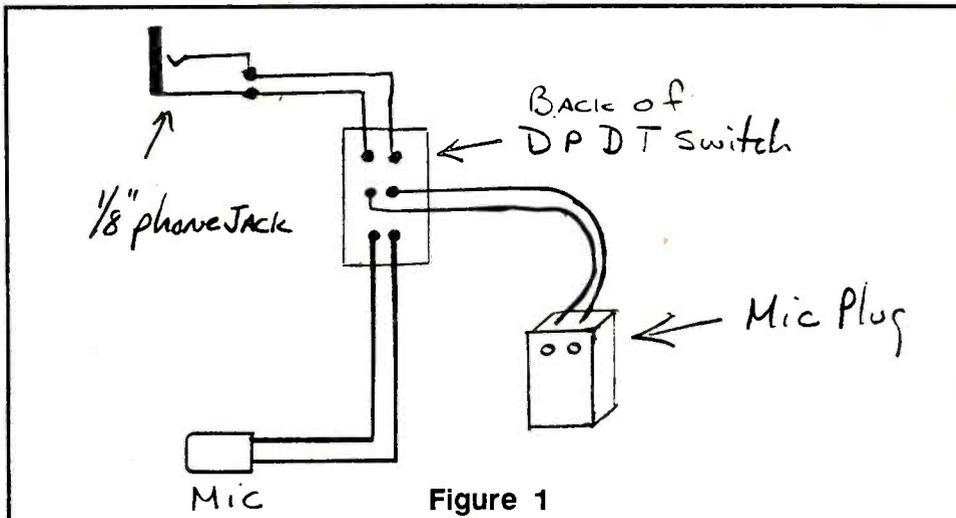
Common Sense Prevails:

Read the 2010 manual and heed the instructions when it comes to external antennas. Active antennas should not adversely affect the 2010. I have used the following commercially manufactured active antennas with a Sony 2010 with absolutely no ill affects and outstanding results: Datong AD-270/370, Sony AN-1, and Inline Components AC-1 Micro Module. There is no reason to believe that any of the active antennas by Grove Enterprises, MFJ, Dressler, Dymek or others could not be used with equal success with no harm to the radio.

Okay, now that we've covered active antennas, how about "high gain" external wire antennas -- dipoles, end fed wires, Beverage antennas -- and beams, etc? Well, here is where some confusion creeps into the picture. ANY external antenna, as in an antenna that is outside the shack, that is hooked to the 2010 has the potential to cause problems. These antennas, regardless of configuration, will be susceptible to static caused by rain, lightning, high winds, etc. Therefore, they all pose a potential problem to the 2010 front end, if they are hooked to the external antenna input port. The obvious solution to the problem is not to use any outside antennas.

Certain antenna tuning units, like the Grove TUN-4, have static discharge protection built into the ATU. Using an outside antenna coupled to the TUN-4 and then into the 2010 should work fine. The static discharge protection in the TUN-4 will bleed off any static charge built up on the outside antenna and protect the Sony 2010 RF front end. Now, I do not have a list of antenna tuning units that are static discharge protected, but maybe the readers of this column can provide some insight on this.

Now the Good News: In talking to Bob Grove, I learned that over the last two years, Grove Enterprises has not had one documented case of Q-303 (RF front end) failure. Apparently Sony has fixed the static discharge protection problem on late model 2010s.



Portable Scanning Without a Handheld

useless. It's amazing what 10W-40 can do to a radio.

Doug Arvella of Thornwood, New York, sent in a novel approach to monitoring around the house without going to the expense of buying a new handheld scanner. It seems that Doug had (notice the past tense) a handheld that he took with him around the house to keep up with the local action on the VHF/UHF bands.

That is, he had a handheld scanner until the day he dropped it into a container of oil which he had just drained out of his car. You mean you don't take your handheld scanner out to the garage when you change your oil? Needless to say, the scanner was rendered

Since Doug wanted to stay on top of the action bands, and a new scanner was not in the budget, he looked for an alternate solution. What Doug came up with is applicable not only to scanner listeners but to shortwave listeners and hams as well and the price is right. A visit to the local Radio Shack store netted a Portable FM Cordless Room Monitor (RS # 43-202) for a total of \$39.95. (Ed note: RS changes models in their product line like most women change shoes. Check out the current catalog or ask your local RS salesman for help in selecting the right product.)

Doug's premise was if the cordless room

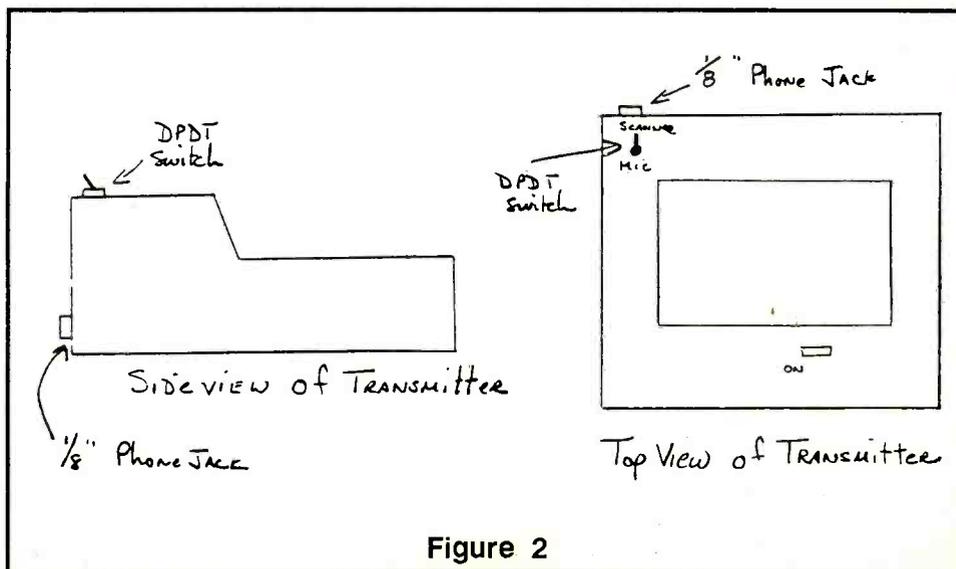


Figure 2

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, c/o MT, P.O. Box 98, Brasstown, NC 28902

monitor could hear a baby, why couldn't it hear a scanner? Doug took the monitor home, plugged it in according to directions and fired up the PRO-2004 scanner nearby. Then he took a walk out to the garage with the handheld room monitor receiver to test out his theory. I hope he stayed away from any containers of oil.

Doug reports that the room monitor worked well and relayed all the action coming over the PRO-2004 with no problems. No problems, that is, until his family came home and then the room monitor started picking up conversations from all over the house, which masked the scanner information. Yeah, they are rather sensitive little devices. The theory was proven but a bit of refinement was needed.

Doug purchased a DPDT slide switch, 1/8 inch phone jack and a dubbing cord from Radio Shack and went to work on the transmitter portion of the room monitor. He removed the three screws on the bottom of the unit and pulled the mic plug from the circuit board. The entire unit is now apart and can be easily modified. He located the switch in the top of the case and the phone jack went in the back of the unit. Be careful boring holes and mounting the switch and the jack.

Next Doug cut the wires going from the mic plug to the mic and routed the wires coming from the plug to the center DPDT switch contacts. The mic was connected to one side of the DPDT switch and the phone jack was wired to the other side of the DPDT switch (refer to Figure 1). This configuration allows the input to the transmitter to be switched between the mic for normal room monitoring to the phone jack which can be plugged into the PRO-2004 via the dubbing cable. The unit was reassembled after plugging in the modified mic plug.

Doug was ready for the "smoke test" and plugged the room monitor transmitter into the speaker jack of the PRO-2004 using the

dubbing cable between the 2004 and the jack on the back of the room monitor. With the switch on the room monitor transmitter in the "scanner" position, Doug headed out the door carrying the handheld room monitor receiver. Everything the scanner received was relayed via the room monitor transmitter to the receiver in Doug's hand.

Although Doug did not indicate the range of this unit, I would guess it to be about 1,000 feet. Not a bad low-cost solution to a common problem facing many monitors, SWLs and hams. There is no reason why this application of a cordless room monitor cannot be applied to the SW receiver or ham transceiver, either VHF/UHF or HF. Total cost to Doug including the room monitor and extra parts and dubbing cord was about \$50. Thanks, Doug, for an outstanding tip.

A Call for Mods: Requests and Answers

During the last two months I have received many requests for modifications to specific scanners or SW radios. Here is a call for modifications for the following receivers: RS PRO-2021, PRO-34 and PRO-38 scanners, DX-300 and DX-440 SW receivers, Bearcat BC-210, BC-140/145 scanners, Kenwood R-600 and R-1000, R-2000 SW receivers, Yaesu FRG-7700 and FRG-8800 SW receivers. Send these to *Monitoring Times* headquarters in Brasstown, North Carolina, Attention: Rich Arland.

Experimenter's Workshop readers have come through again. I have received five S-meter circuits for the RS PRO-2004/2005 scanners. In looking them over, the general concepts can be applied to almost any scanner by placing the circuit in the AGC loop. Next month we will feature several of these circuits in this column.

In the meantime, if you can't wait, Phil Moreau, G0FWU, 35 Randel Bennett Close, Elworth, Sandbach, Cheshire, England, has put together a kit of parts including PC board and all components for a fully wired and tested PC board for his S-meter design for the PRO-2005. Contact Phil at the above address. Until next month, keep the soldering iron hot. 73s es Gud DX.

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A Groundplane Antenna for Mediumwave (AM) through UHF

The standard quarterwave vertical groundplane antenna is a very popular antenna, and with good reason: it gives good all-around coverage, is inexpensive, easy to make, durable, and easy to install. But there is another antenna, a cousin of the quarterwave groundplane, that is almost as easy to make and install and yet gives you a couple of worthwhile advantages over the quarterwave. First, it gives you a worthwhile gain over the quarterwave: more gain and a lower angle of radiation. The antenna I'm referring to is the five-eighth wavelength vertical groundplane.

The five-eighth wavelength vertical has long been used in AM broadcast, by ham radio operators and various other installations where a low vertical radiation pattern is important. This antenna is utilized from MF to UHF, but practically speaking, for most of us its height makes it impractical for the MF band or even the lower end of the HF band.

So Let's Build One:

Using the formulas in Figure 1 you can design your own antenna for the HF, VHF or UHF band. On HF a guyed vertical radiator made of aluminum tubing or metal gutter pipe can be used with a heavy insulator, such as a thick-glass bottle, at the ground end for a

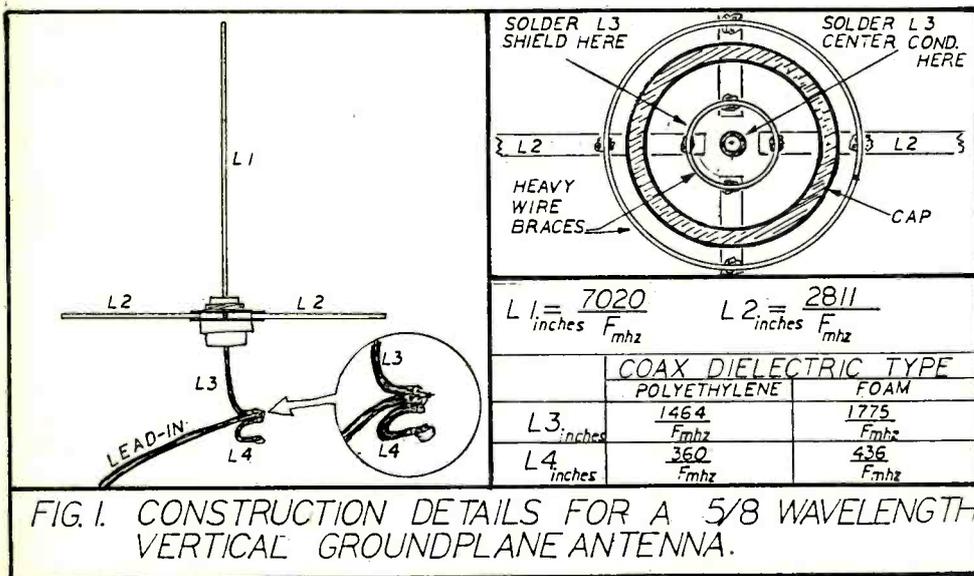
base. On the other hand, many find it easier to use a heavy wire vertical element hung from a tree.

To make the VHF/UHF model, you will need the length of copper rod or tubing indicated by the formulas, a length of 2-1/8 inch OD PVC pipe to serve as a mounting mast, an end cap with square-topped, threaded plug for the PVC pipe, a length of RG-58 coaxial cable for the matching sections and the lead-in, and about two feet of No. 10 or No. 12 copper wire for bracing the groundplane. You will also need some epoxy glue to cement things in place. Avoid any glue that seems to have a metal filler.

upside down (compared to its final position as shown in Figure 1).

Temporarily mount the vertical element securely in a vertical position with the plug upside down at its top. A vise is good for this or you can tie it to some stable object. Make sure that the antenna is in-line with the center axis of the plug as it is in Figure 1. If you wish you may use small bits of dry wood or plastic between the element end and the inside of the plug to hold the plug in proper alignment. Fill the inside of the plug cavity around the end of the vertical element with glue. Completely cover any wood bits you have used. Let it harden.

1. From the formulas in Figure 1 determine the lengths for the vertical element and the four radials. Cut them to length using a tubing cutter or other convenient means.
2. Take the plug from the end cap and drill a hole the diameter of your elements in the center of the square end of the plug. Insert one end of the vertical element into the drilled hole until the element is into the plug for the full length of the plug. In this position the bottom end of the vertical element will be just even with the bottom of the threaded portion of the plug. Now position the plug so that it is
3. Drill four equally-spaced holes the diameter of your elements in the end cap so that they enter the cap from the side just at the bottom of the threaded portion of its inside wall. When the radials are later installed in these holes, this positioning will allow you to tighten the plug down on the ends of the radials and provide an extra measure of strength in holding them in place. Drill the holes straight in from the sides so that the radials will stick straight out from the cap.
4. Insert the radials so that there is one-half inch of each radial showing inside the cap. This leaves about five-eighth inch between the inside ends of opposing pairs of radials. Make a circle of one inch diameter from the heavy copper wire and place it on the inside ends of the radials as shown in Figure 1. Solder it to the ends of the radials.
5. Cut two lengths of heavy copper wire, each about 10 inches long. Fashion each into a circle. Put these on the radials just outside the cap as shown in Figure 1. Solder them in place.
6. Determine the lengths of L3 and L4 from the formulas of Figure 1. Cut lengths of coax for L3 and L4 with one-half inch extra length more than the formula lengths you obtain. This extra one-half inch will be used in attaching these cables



together. Trim the outer insulator back one-half inch from each end of L3 and L4 and the end of the feedline that will attach to them. Then trim one-quarter inch of the braid (shield) and center dielectric of these ends, exposing one-quarter inch of the center conductor.

Be careful that small wires from the coax braid do not cross over the dielectric and short out to the center conductor. However, do short and solder L4's center conductor to its shield (braid) at one end (see Figure 1).

7. Solder L3, L4 and the lead-in together as shown in Figure 1. This is accomplished by soldering together the center conductors of all three cables and also the braids of all three cables. Check again to see that there is no short between a loose small wire in the braid and the center conductor of each cable. A magnifying glass is useful for this task. Cover this cable connection with plastic tape.

8. Screw the plug with the vertical element into the cap. Screw it down tightly to help hold the radials in place. Now solder the free center conductor of L3 to the bottom of the vertical element and the shield of L3 to the small circle of heavy wire inside the cap.

9. Pass the lead-in through the length of PVC pipe that you are going to use as a mast and attach a connector that fits your receiver's antenna input to its far end.

10. Mount the antenna as high and in-the-clear as practical and connect to your receiver. You are now ready to monitor.

11. If you live in lightning country, don't forget to add some kind of lightning-induced damage protection. The minimum here is to unplug-and-ground the antenna when it is not in use, and to never use the antenna in weather likely to produce lightning.

RADIO RIDDLES

Last Month: Last month, in talking about radio direction finding (RDF), I mentioned a "goniometer" and asked you what the term means.

Basically the term means an "angle

measurer." For RDF, a goniometer consists of outside antennas connected via lead-in cables to coils in an antenna coupler which has a dial marked with the points of a compass. As the dial is turned, it turns the coils in the coupler, which electrically rotates the antenna system reception pattern.

By tuning to a specific signal on the receiver and then rotating the goniometer dial to get a "null reading" (significant decrease in signal strength) on that signal, the direction to the station transmitting that signal can be read from the goniometer dial.

Next Month: When antenna plans call for some specific length, like a quarter wavelength of wire and also a quarter wavelength of coaxial cable, the two quarter wavelengths turn out to be different measured lengths. For instance, a quarter wavelength in regular coax at 10 MHz is 16.2 feet but in wire is 24.6 feet. For foam dielectric coax it's different than either of these values. Is a quarter wavelength different for coaxial cable than for plain wire? If so, how can this be? We'll clear this up next month. 'Til then, Peace, DX and 73.



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If you request a personal reply, you should always enclose a self-addressed, stamped envelope.

Q. Are there any quick and easy hints about indoor antennas for HF hamming? (Mark Goodson, State College, PA)

A. Most of the same caveats regarding indoor receiving antennas apply to transmitting as well. Impedance matching is more of a concern in transmitting, so always use a transmatch ("antenna tuner"). A good ground or ground counterpoise (quarter wavelength of wire for each band used attached to the chassis) is mandatory.

Always use enough wire (50-100 feet), erected as high and straight as practical, and as far away from electric wires and large metallic masses (air conditioning ducts, metal siding) as possible.

A good TVI filter for transmitters is always recommended.

Q. I would like to connect two shortwave receivers to one common random wire antenna. Any suggestions? (Frank Sedlack, Pittsburgh, PA)

A. There are several possibilities. First, simply jumper the two antenna inputs together (if they are both 50 ohms) and attach them to the antenna; no harm will be done other than hearing the oscillator of one receiver occasionally tune by the receiving frequency of the other. Some purists install a 47 ohm resistor in series with each receiver lead to ensure no less than 50 ohm match and add some isolation.

If efficiency is poor and you don't need both receivers going at once, a CB-type antenna switch works perfectly. So does a video game switch (with appropriate cable adaptors).

If you are a perfectionist and want both receivers going at once, you may wish to try a simple TV-type two-way splitter. That works, too. A commercial package built around just this part for shortwave use is the Grove CPL-SW Multicoupler (\$39.95 including cables and universal adaptors).

Q. How can I keep my receiver from picking up noise radiated by a nearby TV set? (Jim Slater, Scranton, PA)

A. Most TV interference comes from the horizontal sweep oscillator; while its fundamental frequency is about 15.75 kHz, its raspy harmonics extend nearly to VHF!

Install a 30 MHz high pass filter on the TV set; install a 30 MHz low pass filter on the shortwave radio; separate the receiver and TV as distant as possible; ground both sets if possible; shield the inside of the TV cabinet if possible and ground the shielding.

Q. My Regency TurboScan overloads terribly from nearby signals. What can I do to prevent this? (Chuck Heath, Coufferville, CA)

A. The TurboScans had excellent sensitivity, but were notorious for front-end overload. You actually need less signal strength. Try a

smaller (indoor) antenna; use cut-to-frequency, directional antennas; add a Grove FTR5 Scanner Filter (removes strong TV and FM broadcasting signals which can combine to produce intermod); install an in-line attenuator (10 dB units are available from Radio Shack). Move.

Q. How can I decide what kind of accessory I need for monitoring radioteletype and other kinds of digital communications? (James Clark, Rockford, IL)

A. First, decide which modes are of greatest interest to your monitoring, then check the ads to see what is available. Do you already own a home computer? If so, all you need is a simple interface (like the AEA PK232A) and software; much cheaper than buying a stand-alone demodulator (like the powerful InfoTech M7000), but computer noise may radiate into your receiver, adding interference.

All systems, whether utilizing computers or not, operate on the same principle: Dual-level audio tones from the receiver's audio output accessory jack are converted into voltage levels which the computer interprets as characters. These characters may be displayed on a screen and/or fed to a printer.

Be sure to use adequate shielding; audiophile interconnect cables are usually not shielded enough for radio frequencies. Use coaxial cable and add appropriate connectors.

Q. A popular scanner book warns readers not to use RG-59/U or RG-6/U coaxial cable "since they are intended for TV sets and not for communications use." If this is true, why does one of your advertisers continue to recommend RG-6/U cable? (Joseph Bial, Chagrin Falls, OH)

A. Nothing could be farther from the truth, yet that myth continues. The fact is that while communications equipment is standardized for 50 ohm transmission lines and TV systems are rated at 75 ohms, no antenna made maintains a constant 50 or 75 ohm impedance over the wide tuning range of modern receivers and scanners. It is common for impedances to range from a few ohms to several hundred ohms.

A receiving cable, therefore, is not chosen for its impedance, but for its low loss and

Bob's Tip of the Month:

RERUNS

More on the ICOM HTs

In our September, 1990, issue we listed general-coverage receive procedures for three popular ICOM hand-held transceivers. Several readers had no luck in implementing the tricks.

A call to the ICOM factory revealed that in some early models, a small inhibiting diode, D9, must be removed for the keyboard command to be effective. D9 is the only glass diode visible, and it is located near the diode matrix behind the keypad.

Once the diode is gone and the nimble-fingered keyboard tactic is begun, the keys must be held down for a few seconds as the display gradually scrolls,

revealing the VFO message which indicates it is ready for the new range.

BC100XLT Extended Battery Life

While the procedure outlined in our June 1990 issue of *MT* adds hours of charge life to the batteries of the Uniden BC200XLT, Jeff Elson of Brookfield, Missouri, reminds us that it will work on the BC100XLT as well. Just keep in mind that the two round capacitors are mounted vertically on the BC100XLT, not horizontally as shown for the BC200XLT. Nice hint for our BC100XLT owners--thanks, Jeff!

Questions or tips sent to "Ask Bob," c/o MT, are printed in this column as space permits. If you desire a reply by return mail, you must enclose a self-addressed, stamped envelope.

high shielding characteristics. RG-6/U (75 ohms) is infinitely superior to RG-58/U (50 ohms) and equal to the performance of the highest grade—and higher cost—RG-8/U (50 ohms) cables.

Even more expensive premium cables like Belden 9913 (50 ohms) are marginally better, and then only at the highest frequencies (800 Mhz and above) and long runs (in excess of 100 feet).

Q. I am interested in getting my amateur radio license. How do the receiver sections in modern transceivers compare with separate general coverage receivers? (Dwight Hanson, Tacoma, WA)

A. They are identical. It is not necessary to consider a separate receiver when purchasing a modern transceiver.

Q. I recently bought an old Hammarlund HQ100-C receiver at a hamfest. Where can I get a manual, and how can I convert the "megacycles" reading to today's "megahertz"? (Bob Geberth, Cooperstown, NY)

A. Sadly, Hammarlund went out of business at least 20 years ago. You can get a manual reprint, however, for \$12.50 postpaid from Hi Manuals, PO Box 802, Council Bluffs, IA 51502.

Since the older frequency units did not refer to time (it should have been cycles per second, kilocycles per second and megacycles per second), American industry switched to the European unit (hertz, kilohertz and megahertz) which did. Fortunately, the numbers remained the same (1 megacycle per second equals one megahertz).

Q. A local communications system recently switched to 800 MHz trunking, but I don't know all of their frequencies. How can I program my scanner? (J.A., Deer Park, NY)

A. If you know even one frequency, you're almost there; otherwise, put your scanner in the search mode to find at least one channel.

Trunking is licensed in blocks of five frequencies, all separated by 1 MHz. If you

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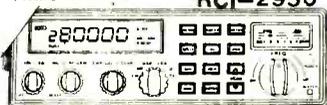
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come across, say, 901.1565, and that happens to be the first channel in a block, the others will be 902.1565, 903.1565 and so on.

Since you don't know which channel in the series you heard, load five frequencies progressively higher, and five frequencies progressively lower, than your known frequency; then scan, waiting for your hits. You can gradually figure out the plan.

A comprehensive list of questions and answers regarding monitoring may be found in Bob Grove's "Scanner and Shortwave Answerbook," \$12.95 plus \$2 shipping from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902.

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LETTERS

continued from page 3

in purchasing such items could let me know. Any other ideas will, of course, be gratefully received."

What a quaint idea, teaching capitalism to Bulgarians. If you're interested in giving Nigel and his Bulgarian friends a hand, drop us a note and we'll pass your letter on to him.

Nigel's letter regarding the Bulgarian DXers is not the only one. Here at *Monitoring Times* we've been amazed at the number of Russians and Eastern Europeans who are writing in to ask about subscription rates. Some have even picked up on a little capitalism on their own, offering to trade articles and frequency lists for subscriptions.

Writes Alexei Yakovlev of Kameshkov City, "I live in Central Russia but sometimes a back issue of your magazine reaches my hands. I am prepared to contribute to your publication covering Soviet shortwave listening activity, with possible topics: who are the shortwave listeners in this country, their qualifications and skills, the equipment they used, etc. As a reward I could be interested in a subscription for your magazine as well as in improving my writing abilities in English."

Bob Kozlerek write from his home in Elmwood Park, New Jersey, where he has been puzzling over a signal on 895 kHz. "The station is identifying itself as 'Fun Radio -- Powerhouse of the Eastern Caribbean.' Program content would lead me to believe it to be located on the island of St. Nevis. The power, according to the station identification, is 10 kW."

You have correctly put the pieces of the puzzle together, Bob. Once known as "The Voice of Nevis," Fun Radio operates from Charleston, Nevis. Good catch! You see, AM DXing can be fun!

"**How** about some information on QSL cards prepared by listeners for those stations that might not have their own QSLs?" asks Preston Sewell Jr., of Franklin, New Jersey. Some QSL collectors prepare their own cards and enclose them with their reception reports to stations, often utility stations like ships at sea, that are unlikely to have their own QSL card.

"I'll bet that there are a lot of different and creative solutions to the problem," says Preston. "I've enclosed a couple that I have created on my IBM PC using Harvard Graphics software and printed on a laser printer."

By the way, Preston also sends a picture of his monitoring post (JRC NRD-525, Sangean ATS-803A, Regency MX3000 and Bearcat 200XLT) ... The cat checking out the shack is

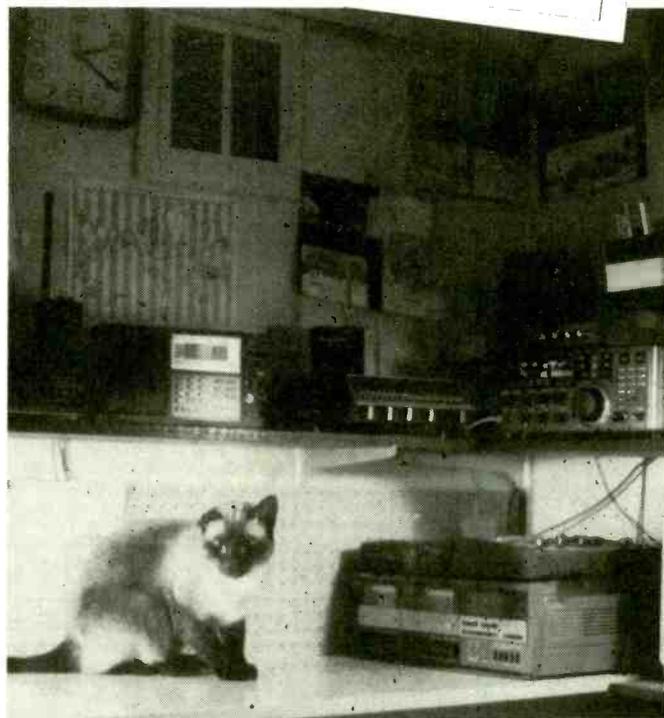
found walking around on his personal QSL, too.

Regarding prepared form cards, Preston says, "I'd be interested to see what others have done and to learn how they did it and what tool they used."

Folk? Are any other *MT* readers practicing the fine art of prepared QSL card-making?

C.R. "Rich" Armstrong of Puyallup, Washington, is an enthusiastic reader of *Monitoring Times*. "Swapped *QST* for *MT*," he says.

Rich used to be a really hot ham, doing things like "bouncing our 2 meter signals off Mt. Rainier." Still, he



admits to losing interest in the technical end of things. "I no longer have any desire to keep up with that sort of thing. Neither do many others. And I'm tired of hearing about Morse code. The only concern that we should have is making sure that we don't allow anyone to take away our parts of the radio spectrum."

Another *MT* fan, Raymond Miller of Williamsville, New York, sends a snapshot of his "scanner cart" which keeps his toys close by (PRO-2020, PRO2004, PRO2005, PRO34 and PRO30, DX-440 for shortwave, plus

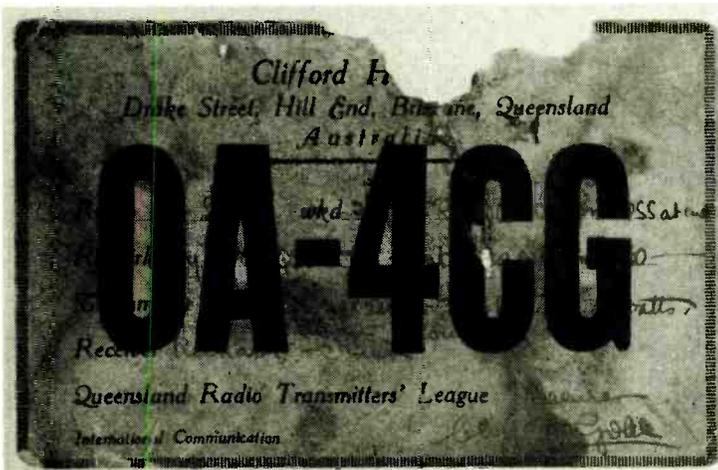


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Date	Location	Club/Contact Person	
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Nov 4	Westminster, MD	Carroll Co ARC, Penn-Mar RC/ Ken Jones KB3JA 218 Centennial Ave, Hanover, PA 17331	
Nov 9-11	Houston, TX	So Texas Convention/ Rory Burke KA5MBH P.O. Box 524, West Columbia, TX 77486	
Nov 10	W. Monroe, LA	Twin City Hams/ Benson Scott AE5V 745 40 Oak Farm Rd, W. Monroe, LA 71291	Dec 1-2 Ft. Lauderdale, FL
Nov 17-18	Dauphin Is, AL	Special Event Station W4IAX/ Mobile ARC 1300Z Nov 17-0000Z Nov 18; Frequencies: 3925, 7225, 14225, 21325, 28325 MHz Send QSL card or note mentioning time and frequency heard; plus business-size SASE and \$1	

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Monitoring Times is happy to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to: Monitoring Times Convention Calendar, P.O. Box 98, Brasstown NC 28902.



various guides, manuals and frequency directories). Raymond started listening to scanners as a teenager, which may have influenced his career decision to become a police officer.

Raymond says he keeps a scanner with him both on and off duty -- a habit which paid off three years ago. "We were looking for two bank robbery suspects who escaped on foot after a high speed auto chase. My scanner picked up a local ambulance driver talking to his dispatcher excitedly that 'one of the guys the police are looking for just ran by our unit on a certain street.'" Being just one block over, Raymond doubled back and made the capture.

Raymond maintains that a scanner in the hands of a civic minded citizen is a positive tool in law enforcement. "Needless to say," says this officer, "I don't agree with those who lobby for taking scanners from law abiding citizens."

Who says radio is an armchair hobby? Another reader, Joey Boone of Hodge, Louisiana, sent an old QSL card (dated 1927) from Brisbane, Queensland, Australia. How he came by it is the story. The property across the street from his home had belonged to an amateur radio operator. "The house has been falling in for several years," says Joey. "While a friend and I were out there looking around, I

found what I gathered to be his radio shack. I found nearly 100 old cards, and an old transmitter which stood nearly five feet tall.

"I lifted up the old transmitter, and to my surprise and horror, I also found a 5-1/2 foot long rattlesnake. The snake had 15 rattlers, and it took me less than 15 seconds to be 100 yards away!"

Not to be daunted, Joey went back later (with a shotgun!!) and killed the snake. He came up with several old QSLs, and we appreciate his entrusting us with this original 1927 verie.

Gene Wilkin, a subscriber and broadcast consultant since 1974, writes to say that the often dim view of TV that we sometimes take is unnecessary. Calling it "anti-broadcast propaganda," Gene feels that "attributing 'the decline of culture and solid moral values' to television viewing qualifies as an editorial comment and should be labeled as such."

He continues, "I spent forty-plus years working with some of the finest individuals I'd been privileged to know in life; all of it in radio, television and film syndication. To denigrate *Roseanne* and *Cosby* (you should write such successful material) only blows the competitive print horn that television is a 'wallow.'

"*MT* is a marvelous and worthy 'read' that I will keep until the issues (or I) disintegrate," concludes Gene, "but tearing down nets zero. Why not support such communications? You're in that business."

"**Someone** told me," writes Ken Atlee of Washington, D.C., that there is at least one picture of publisher Bob Grove hidden in every issue of *Monitoring Times*. Is this true? No.

Hugh Walton of Leawood, Kansas, has got a solution to the problem of keeping track of all the memory channels on the Sony ICF-2010 that would probably work pretty well with a lot of other receivers as well. "I have had difficulty in making a plastic overlay as your readers have suggested, the main problem being the precise cutting of 32 rectangular holes," says Hugh.

"Using the kind of label used at many social functions ('Hello, my name is...'), I type in 3 letter codes for each frequency I wish to retain. Then, I peel off the backing to expose the sticky side, cut to size, and press on to the keys. Three typed capital letters exactly covers one key. To change a listing, simply peel it off and replace."

Nice idea, Hugh. Aren't *MT* readers great?

We've got another idea on how to make the most of your listening time. Judy Norton of Billerica, Massachusetts, suggests that you connect your receiver's phone/record jack to your VCR's "AUX" audio input. You can record for six to eight hours, says Judy, and use the VCR timer. "It's even better," she says, "if your receiver and VCR are part of your full audio system -- the sound is so much better."

Judy closes by saying that she "enjoys *MT* very much, especially the shortwave listings and helpful tips."

Finally, we offer our congratulations to Radio Canada International's Ian McFarland. This month -- on the 18th, to be exact, he is celebrating the 700th edition of the popular *Shortwave Listener's Digest*. That's 700 shows without missing a beat -- no absences and no repeats. Congratulations, Ian! That's no easy task.

We'd like to hear your comments, opinions, and experiences concerning the world of radio.

*Letters should be addressed to **Letters to the Editor**, Monitoring Times, P.O. Box 98, Brasstown, NC 28902.*

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Closing Comments

The 1990 Convention



Exhibitors and attendees alike were well pleased.

Well, it's history. The inaugural *Monitoring Times* convention in Knoxville, October 5-7, 1990, is now in the record books -- and a record it was. Some 300 radio enthusiasts besieged our 20 commercial exhibitors (much to their delight!) and the forums -- dozens of them -- were packed to the walls!

It took a lot of preparation; our dedicated *MT* staff worked hard -- day and night -- to be sure that everything came out just right. Sure, there were a few things that we forgot, and a few more that we didn't expect, but from what we heard from our guests, our efforts were worth it!

One of the best parts of the convention was getting to meet nice people whose names we had only seen on paper or whose voices we had only heard on the telephone.

Nearly two dozen exhibitors expressed astonishment at their sales. "We made more here than we do at most hamfests!" was their comment.

There was something special about Knoxville -- an aura of adventure, exploring new ground for the first time. Would we be ready, or would our guests perceive us as a bunch of bumbling neophytes, trying to look impressive but with nothing to back it up?

The forums were incredible. The real luminaries of our hobby were there, sharing insights from their years of experience and answering a myriad questions from their appreciative audiences. Technical subjects, monitoring tips, shortwave and scanner listening, broadcasting and utilities, antennas and accessories, the answers were all there. An awesome mecca of knowledge.

Our tours were first rate as well. The McGhee Tyson Airport control tower and communications complex was spellbinding, and our hosts couldn't have been more gracious and patient in their presentations.

The Knox County Emergency Management (enhanced 911) dispatch center looked like Mission Control! This ultra-modern assemblage of computerized consoles was spectacular to behold and, once again, our tour guides couldn't have been nicer, or more qualified to answer the barrage of questions from our enthusiastic conventioners!

The banquet was filled to the brim to hear Richard Carlson, Director of the Voice of America. Carlson, a polished, award-winning orator, kept us spellbound with his insights into international broadcasting and its implications on the world community.

Knoxville retained a delightful reputation for southern hospitality, especially important for our worldwide representatives from Singapore, Finland, Australia, as well as the United States and Canada.

Of all the comments we received, one stood out: "Let's do this again next year!" OK, let's! Next year's will be even bigger and better; we are already working on some ideas that will be absolutely astounding. Watch *MT* for more details as they unfold, and get ready to mark your calendar for the 1991 *Monitoring Times* Convention!

*Bob Grove, WA4PYQ
Publisher*

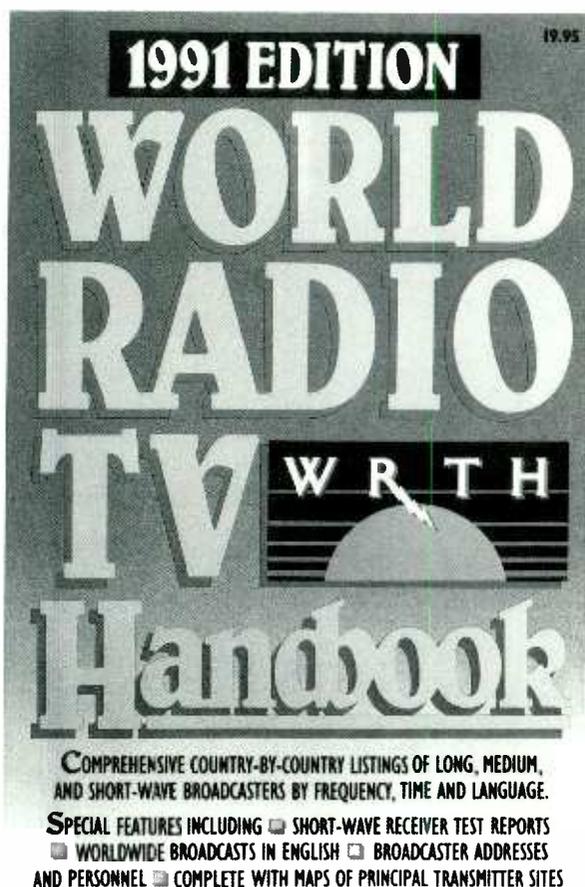
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